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THE
MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—10TH YEAR. SYDNEY: SATURDAY, JANUARY 27, 1923. No. 4.

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OBSERVATIONS ON THE ORIGIN, CAUSATION AND TREATMENT OF RODENT ULCER.

BY NORMAN PAUL, M.B., CH.M.,

Honorary Physician for Diseases of the Skin, Royal Alexandra Hospital for Children; Honorary Assistant Physician for Diseases of the Skin, Sydney Hospital.

AUSTRALIA offers a fertile field for the study of malignant diseases of the skin. With the object of investigating the causation and site of origin of rodent ulcer I have excised and examined histologically a number of these growths after having followed their history and observed their clinical appearances. No uniformity of opinion has yet been reached in regard to this subject, difficulty always arising from the fact that when a rodent ulcer becomes a clinical entity, the growth is well advanced and the site of origin usually masked.

Before I proceed to the microscopical examination of these growths, a cursory review of certain clinical factors will give some assistance in determining their origin and causation. In the first place, it will be shown that the clinical appearances of rodent ulcers may vary considerably and it will later be shown that these features are somewhat constant with the varied pathological appearances. Figures I. and II. show a patient presenting on the face three distinct rodent ulcers, each lesion appearing clinically different from the other. On the nose is a somewhat bossy, non-ulcerating growth; on the right side of the face is an ulcer with a beaded border, whilst beneath the left eye an ulcer is presented with an indifferent border.

Causation.

Reviewing an European expression of opinion, where climatic conditions are different to those met with in this country, Dubreuilh[1] states that rodent ulcer begins ordinarily on a healthy or normal skin in the form of a salient, hemispheric nodule of a yellowish-rose colour, semi-transparent or sometimes pigmented. It is covered by epidermis, thin and smooth, and does not ulcerate until later. In quite late cases they are consecutive to a senile keratoma, to a nævus, or can be provoked by traumatism. He records statistics to show that exposure does not play the same part in producing a rodent ulcer as it does in producing keratomata or epitheliomata, for in a series of patients with keratomata and epitheliomata collected by him 62.5% had an outdoor occupation, 37.5% had an indoor occupation, whilst of one hundred and five patients with rodent ulcer, thirty-five pursued an open-air vocation and seventy worked in the shade. He is of the opinion that dwellers in the city and country are equally prone to it and the proportion of two dwellers in the shade to one worker in the sun is the usual proportion of

patients attending his clinic. I am in accord with Dubreuilh that a growth histologically indistinguishable from rodent ulcer may be consecutive to a senile keratoma or what might be more aptly called *keratosis solare* (Figure III.), that rodent ulcer may be consecutive to a nævus (a mole) or can be provoked by traumatism, a history not infrequently given by patients. But I am of the opinion that in Australia they are of more common occurrence in those working outdoor, especially in the country, and that the actinic rays of the sun may directly or indirectly produce them. (Undoubtedly, the actinic rays of the sun are more prone to produce keratoses and epitheliomata than rodent ulcer.) However, there is a large class of rodent ulcer that appears spontaneously to which attention must also be directed. Included in this category as a typical example are those somewhat rare cases of multiple rodent ulcer which occur in young adults between the ages of twenty and thirty and are characterized by numerous (thirty to forty) typical rodent ulcers widely disseminated over the face.

Photographs illustrating this type are shown in my book[2] under "Multiple Rodent Ulcer." It is a significant fact that, although rodent ulcers may occur on practically any portion of the body, they are usually localized on the face and more especially

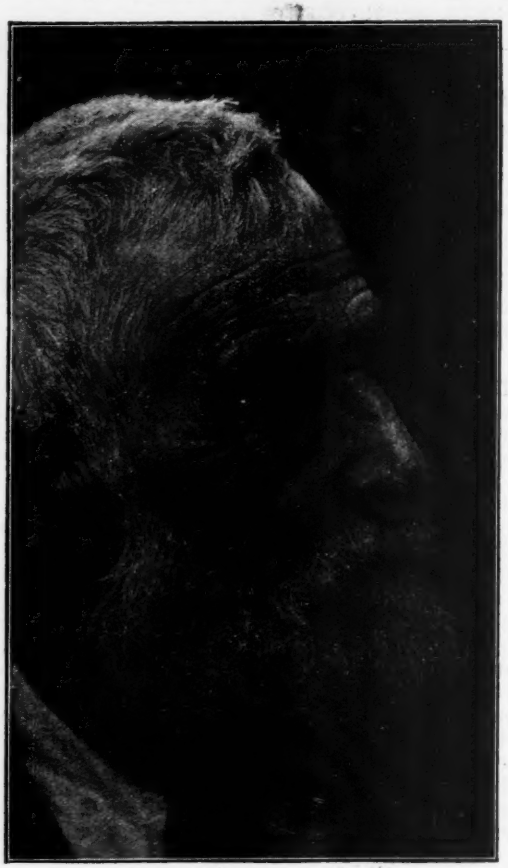

FIGURE I..

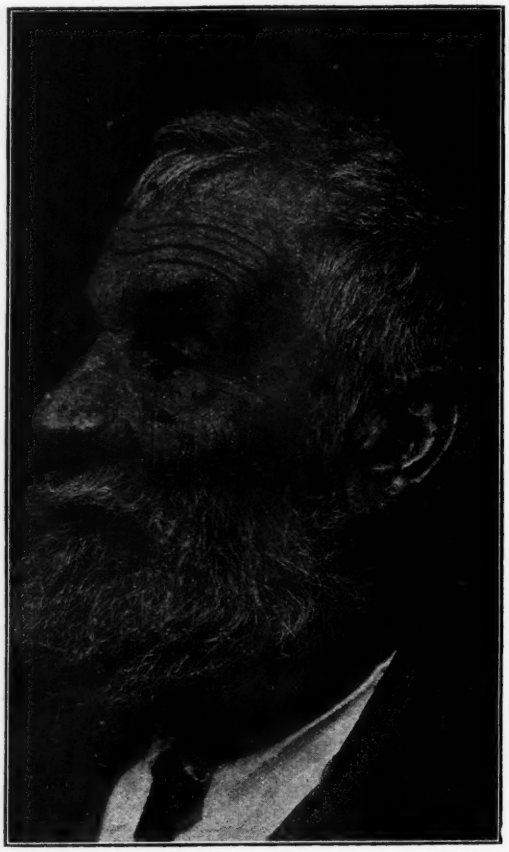

FIGURE II..

to the central horizontal third. The sites of predilection are the eyelids, especially the inner and outer canthi and the naso-facial grooves. Moreover, in patients exposed to strong sunlight one or more rodent ulcers may be seen on the face, whilst on the neck and dorsum of the hands of the same patient there may be present innumerable keratoses, but rodent ulcer occurs seldom on the dorsum of the hands and never or very rarely indeed on the back of the neck. To what can this special area of localization be attributed? Can it be attributed to the fact that on the hands and neck the hair follicles are formed and a function is assigned to them, whilst there are present on certain areas of the face hair follicles or pilo-sebaceous apparatus of a more embryonic and more immature type? Progressing further, we arrive at a theory which has been expounded enthusiastically by various dermatologists[3] and which, although hypothetical, would appear to account for a large number of those cases of rodent ulcer occurring spontaneously, namely, the nævoid theory. At various periods of life new growths appear on the cutaneous surface which are doubtless associated with some congenital defect. These so-called nævoid growths manifest themselves at certain periods of life, for example, at birth (moles), at puberty or a little later (*adenoma sebaceum epithelioma-adenoides cysticum* of Brooke) *et cetera.*

According to the theory of Cohnheim, they are regarded as embryonic development.

The face is the site of predilection of these nævoid growths and in order to understand better the reason for this localization, it is necessary to recall to mind the human development *in utero* and to review the important part played by the fusion of the various parts in the face region at this period. It may be possible for some congenital defect to take place during fusion at this developmental period which may assert itself at birth or lie dormant and only manifest itself at a later period. This congenital defect might consist of an epidermal cell rest, capable when subjected to some special stimuli, of proliferation, or it might consist of a rudimentary or embryonic type of pilo-sebaceous apparatus which, being unstable, might likewise, when subjected to certain stimuli, attempt to proliferate. Such stimuli might be represented by general metabolic stimuli as seen at puberty (*adenoma sebaceum*) or physical stimuli produced by irritation *et cetera*. Age is a potent factor in rodent ulcer, producing senile or retrograde changes in the corium, so that the normal balance between epidermis and corium is altered and the check on the development of immature nævoid cells or immature pilo-sebaceous follicles is removed.

Age is not the sole factor in producing these senile or retrograde changes, for the actinic rays of the sun can produce a precocious senility of the skin.

Summarizing the nævoid theory, it may be said that in the embryo the basal cell layer can aptly be regarded as a plastic layer, capable of developing not only the remaining layers of the epidermis, but also capable of being moulded or modelled into the various adnexa of the skin. But in some cases there remains in the basal cell layer certain foci of cells (cell rests) which, owing either to an alteration in their environment or to some stimuli at a later period of their development, cause them to make a futile attempt at the development of the appendages of the skin resulting merely in cellular proliferation.

FIGURE III..
Basal Cell Epithelioma Originating Beneath a Keratosis.

Origin.

If an examination of a large number of growths of the rodent ulcer group be made and a number of serial sections be examined, the site of origin is in the majority neither disclosed nor even indicated. For, I repeat, by the time the lesion has appeared as a clinical entity, the growth is well advanced and the site of origin masked. There is for the most part a visible connexion neither with the surface epidermis nor with the pilo-sebaceous apparatus.

It is a significant fact, however, that the growth is sometimes seen to occur in lobules and can occasionally be observed to be spaced at somewhat regular intervals in the corium, suggesting the position or sites of the pilo-sebaceous apparatus. They thus differ from squamous epitheliomata, in which the site of origin is usually readily visible, and are generally connected with the surface epidermis by broad downgrowths. Again, there is occasionally to be seen in sections of rodent ulcers what appears to be a broad downgrowth from the surface epidermis, but on closer examination is seen to be a mass of rodent growth, in apposition with and pushing its way against the surface epidermis, with the result that the rodent cells are markedly compressed, resembling parakeratotic horny cells, and give the growth the appearance of having arisen from the surface epidermis.

But occasionally the growths are seen unmistakeably to arise and to be continuous with the basal cell layer. This connexion with the basal cell layer is well seen in the basal-cell epitheliomata, which as a late stage occur in the condition known as "precancerous dermatosis of Bowen."

The histological features of rodent ulcer vary considerably and afford evidence in a determination of the site of origin. They may broadly be grouped as follows:

Reticular Type.

In this type the growth is composed largely and for the most part of strands of cells, sometimes one, two or more layers in thickness, enclosing the connective tissue of the corium in a meshwork of cells,

finally cutting off its nutritive supply and leading to its entire absorption. When this stage is reached, the rodent growth is observed to surround empty or vacuolated spaces or perhaps spaces in some of which this colliquative process has not advanced so far, still leaving a few cellular elements, or may be a few disintegrated cells or their nuclei. This type of rodent ulcer is usually composed of cells which are moderately large, irregularly rounded in shape and containing, in addition to an irregularly rounded nucleus, an average amount of protoplasm. These cells are, for the most part, loosely or at least not tightly packed and usually lie in a loose and somewhat œdematous stroma. But often one of the most characteristic features is the regularly rounded nature of the new growth surrounding empty spaces. This is more than a chance formation and is doubtless an unsuccessful attempt on the part of the new growth to form some definite structure.

This type of neoplasm usually occurs on the nose, is not infrequently associated with numerous sebaceous glands, sometimes of an immature type, and, in fact, might be regarded as a basal cell epithelioma in which there is an attempt at the formation of sebaceous glands. This is supported by their occurrence on a portion of the face (the nose) where the sebaceous glands are most marked and active. Clinically, these new growths usually differ in appearance from rodent ulcers occurring on other areas of the face, for they generally reach a larger size, are more raised before ulceration and are usually of slightly more rapid growth. The growth on the nose of the patient in Figure I. illustrates clinically this type of neoplasm.

The Budding Type.

This is a solid type of growth showing budding or finger-like processes. This type of rodent ulcer is generally sharply margined and usually separated from the surrounding connective tissue by a well-defined marginal palisade layer of cells.

The growth consists of closely packed cells of a spindle shape, with very little protoplasm surrounding the nucleus.

By the coalescence of adjacent budding or finger-like processes, areas of stroma may be isolated, undergo colliquation and appear as cavities in the solid mass of new growth. In some instances these finger-like processes invade granulation tissue; one or more of the vascular channels may remain and thus give an erroneous impression of the neoplasm being an endothelioma, derived from the endothelium of the vessel wall. The cells composing this type of growth closely resemble cells found in hair follicles; and lanugo or immature hair follicles are not infrequently found to be associated in the same section. Moreover, this type of rodent ulcer simulates the histological picture seen in that benign nævoid condition known as *epithelioma adenoides cysticum* of Brooke, which is generally regarded as a tricho-epithelioma, so that we might be justified in designating it a basal cell epithelioma in which there is an abortive attempt at follicle formation or in which the growth has originated from the hair follicle. Clinically, these growths are the most typical of the various forms of rodent ulcer, appearing first as a nodule, then ulcerating in the centre and spreading with a raised, beaded border. I have never seen them occur on sites other than the face. The lesion on the right malar region in Figure I. is its clinical representation.

Combined Types.

A combination of the reticular and budding types of growth occurs, in which the histological features of both types are represented.

Basal-Celled Growths.

There still remains a type of growth which presents the appearance of a more atypical type of basal cell epithelioma than that represented in the three types mentioned above. There is even to be discerned in some of these neoplasms a connexion with the surface epidermis by a columnar downgrowth of prickle cells, the latter soon changing in appearance into spindle-shaped cells similar to those seen in typical basal cell epitheliomata, but the configuration of these cells is by no means constant, so that in one part of a section we may see masses of the spindle-shaped cells referred to, whilst in other areas the cells may be large, irregular in shape and more loosely associated. In parts there may be a tendency to a marginal palisade layer, described in the budding type. It is apparently due to pressure from the stroma, which may be of a dense, fibrous nature.

The cellular masses are sometimes larger, more indefinite in contour, with irregular processes and may contain irregular cavities, the latter being due to actual necrosis of the new growth. In this type of growth there may in the initial stage be some hyperkeratosis with patulous pilo-sebaceous follicles, so that the growth might arise from the basal portion of the surface epidermis or from the upper portion of the hair follicles about the junction of the middle and upper thirds, thus accounting for the prickle-shaped cells near the surface and the rodent cells in the deeper portion.

Clinically these neoplasms usually show an indifferent border and may appear on sites other than the face. Occasionally they occur on the dorsum of the hands; on the face and hands they may start beneath a keratosis or arise from traumatism. They sometimes occur on the dorsum of the hand as a very slow growing neoplasm of many years' duration, with non-involvement of the lymphatic glands; they tend to cicatrize in parts, whilst spreading in others, with histological features as described.

This group of neoplasms, therefore, as regards their configuration, the slowness of their growth, the usual non-involvement of lymphatic glands and the morphology of its cells, must, on histological examination, be classified as basal cell epitheliomata, although I would not regard them as typical rodent ulcers.

It would thus appear that the first three types represent growths whose origin lies in the pilo-sebaceous apparatus or whose ultimate futile aim was the development from the basal cell layer of pilo-sebaceous follicles, whose normal site is the corium, so that they represent the most typical and

the least malignant of all growths designated baso-cellular carcinomata.

On the other hand, the fourth type appears to represent not a development of the pilo-sebaceous apparatus, but merely a proliferation of the epidermis, in which the fibrous tissue may play an important part in the moulding.

Basal cells normally pass to the free surface, that is, to the horny stage by normal evolution. If the growth arises from the basal cell layer, it normally ought to pass through its various layers until it reaches the horny layer.

This happens when certain types of growths take place into the corium, squamous-cell epithelioma. In this type of growth the corium shows usually a dense cell infiltration and a loose, non-fibrous connective tissue, whereas in the present type the cells often remain of a basal-cell type in the corium. It is perhaps possible for the basal cells, when under certain pressure of surrounding dense fibrous tissue, to remain as such without passing through their normal evolution and thus to originate the present type.

FIGURE IV..
Basal Cell Epithelioma of Pilo-Sebaceous Origin.

CONCLUSIONS.

Causation.

Rodent ulcer may be:

1. A nævoid growth *ab initio* or arise in a previous nævoid growth, *videlicet*, a mole.

2. It may be produced by the actinic rays of the sun as a further stage of hyperkeratosis (atypical as in the fourth type) or as a hyperkeratosis of a pilo-sebaceous follicle producing outgrowths from the latter.

3. It may be produced by injury.

Origin.

From the basal cell layer of the epidermis or corresponding portion of the pilo-sebaceous apparatus it may arise: (*a*) As a nævoid growth in which the germ or seed is present in the basal cell layer or corresponding portion of the pilo-sebaceous apparatus and lies dormant until certain stimuli take place; (*b*) from an immature pilo-sebaceous apparatus or (*c*) from another nævoid growth, *id est*, a mole.

The growth itself may vary in actual appearance, depending on whether the cell rest is destined to form a hair follicle, a sebaceous gland or a combination of these, *id est*, a pilo-sebaceous follicle. When a hair follicle, then the growth is characterized by closely packed cells, somewhat uniform and sharply circumscribed masses, with often a marginal paliside layer showing cells of a spindle shape.

Sebaceous gland structure is indicated clinically by large, reddish masses, usually on the nose (see Figure I.). This structure is indicated histologically by the reticular arrangement, by the fact that the cells are more loosely associated, are larger and more rounded in shape and often surround spaces showing a remarkably rounded or oval appearance. A combination of the first and second types occurs in which there is disclosed a solid or budding type associated with a reticular type. This type arises from a pilo-sebaceous cell rest, from which attempts both at follicle and glandular formation are manifested.

A neoplasm may originate in the epithelium of a pilo-sebaceous follicle (see Figure IV.), which can be produced by traumatism or by the actinic rays of the sun, the latter producing a hyperkeratosis at the mouth of the follicle, followed by outgrowth from the pilo-sebaceous apparatus itself.

Clinically and histologically they resemble the first type and vary accordingly as the hair and sebaceous portions are stimulated to activity.

A growth may arise from the basal portion of the surface epidermis, in which the stroma is not infrequently dense and fibrous and may be due either to traumatism or the actinic rays of the sun. The latter first produces a slight pigmentation of the skin, following by hyperkeratosis. It is beneath these keratoses that a more atypical baso-cellular type of growth may arise, although it must be admitted that in some instances they retain the potentialities of development into a more malignant type of carcinoma. Clinicially they assume the form of a slow growing ulcer with an indefinite border and can not infrequently be distinguished from the more benign type. Histologically they are recognized by the more irregular size of the component portions of the growth, by the more varying type of the cells and occasionally by the connexion of the growth with the surface epidermis through the medium of the narrow connecting link of prickle cells.

Between this type and ordinary squamous epithelioma all grades are met with, so that there is no well-defined limit of demarcation between them.

Treatment.

Treatment is by radium, X-rays, excision *et cetera*. Radium is indicated in almost all cases and I have used it extensively with good results and with total eradication of the neoplasm. The cosmetic results are excellent. Exceptions to the above are those growths involving bone or cartilage, which to-day are few in number and are often the result of unsuccessful surgery. Diathermy may be of service in a few cases, but with such success as is obtained from radium it seems to me that to treat rodent ulcers, as a routine, by diathermy is but to put the clock back.

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EARLY SIGNS OF DISEASE.

BY SYDNEY PERN, M.R.C.S. (ENGLAND), L.R.C.P. (LOND.),
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WHAT is health? Does the mere fact of being free from pain, of being able to do one's work and enjoy one's meals denote good health? Such, however, is the general impression. We as medical men have laid down certain formulæ and have made many tests by which we are able to estimate the functions of certain organs to see if they are showing signs of deterioration; also with much skill and laborious undertakings have reflex arcs and nerve tracts been established, by which means faulty conditions can be detected. All this has been of the utmost value to the advancement of our science and humanity has been greatly benefited thereby. Yet there is an enormous amount of sickness undiagnosed and passed by because it does not come within the scope of all these tests which are laid down for our guidance in the elucidation of disease.

The other day I was talking to a tall, sallow-looking man, very much under weight, who was boasting how healthy he was, yet he had all the hall-marks of disease plainly visible. He was able to do his work and get through life without having to consult a doctor.

One goes into a large building full of many offices, where there are clerks and typists in abundance, and one is struck with the poor physique and the weediness of them. The question arises in one's mind: Are these girls and lads really healthy or are many of them sick and yet unaware of it? Take one of these people and subject him or her to all the tests we have at our disposal and the verdict will be that we can find nothing wrong. Yet there is something wrong; they are undersized and frail and we begin to wonder, is there some organic cause for this or is it just what we understand as constitutional? It is these apparently healthy people that I wish to make the subject of my remarks.

Nature in most things is extremely generous and prolific. She is so in our bodies. She has given us power of combating disease and invasion by bacteria, powers of regeneration of many tissues which are destroyed and repair of damaged ones; as long as these powers hold their own, we are none the worse or apparently so. It is only when destruction outsteps repair that we are aware of trouble. When so much of the tissue of an organ has been destroyed or temporarily put out of action that it is beginning to fail, then and then only are our tests for estimating the functioning capacity of that organ of any use. This in some cases amounts to a destruction of three-quarters.

How often do pathological findings reveal a state of destruction of tissues that was undreamt of? This is probably so in the large majority of cases. Bacterial invasion is by far the biggest factor in causing ill-health and it is by drawing attention to the early symptoms of such invasion that they may be recognized and the cause searched for and serious disease prevented.

Having such a great respect for the powers of Nature, I believe that all children born free from infection and kept free from such can grow into healthy adults. In by far the large majority of patients their young lives are spent in fighting bacterial invasion. Those under the best environment naturally have the best chance. This constant warfare must of a necessity be very detrimental to the proper development of mind and body. Such is the lot of the majority of the children of the present day. I do not wish to imply that much is not being done, but I do wish to draw attention to the fact that all these frail children are fighting bacteria and in the fight their bodies and minds are suffering as a consequence. Can any factor be more important than this? Would any sane parent aware of these things hesitate for one minute in not having the cause of any possible source of damage to their children removed?

How can we expect sane, balanced minds to evolve from such? Constant bacterial warfare can only result in the evolution of political agitators, moral degenerates and sometimes geniuses.

The other day a young man consulted me for staphylococcic pustules on the face. He was apparently a healthy-looking youth, with nothing the matter with him but these spots. In the course of examination, infected tonsils were found. These were recommended to be removed and this was done. When I saw him some weeks later, he remarked that he had never felt so well before, although previously he had thought he was in perfect health. There are hundreds about in the same position; they think they are well; so they are, more or less, but unless a person has never experienced really good health, he is apt to consider his own inferior state of health as being the normal. This is the state of the average man and woman to-day. Owing to the fact that most of the internal organs are not supplied with sensory nerves, there is little to indicate they are being subjected to bacterial invasion.

The grossest destruction of some organs can take place without any knowledge of the fact, until tests of efficiency show marked deterioration. By the time this stage has been attained, it is only with the

greatest economy that the balance can be made to carry on the vital functions. Having realized this point, it is our duty to try and anticipate this damage. The amount of damage done between the time of initial invasion and that stage when our tests are capable of detecting it is so great that in the presence of bacterial invasion we must always remember that this potential destruction is taking place. If one asks oneself: What indication have we of early arterial degeneration? We simply have to own up that we have no means of detecting it until it is far advanced. If we apply the same question to the kidneys, liver, pancreas, myocardium and many other organs, we have to admit the most deplorable inability to detect these things in their early or comparatively early stages.

Men and women go on working year after year, their tissues being gradually destroyed, their health slowly failing and we say they are run down and must take a holiday. This only results in a temporary improvement by changing their environment. Now and then, if their sensory nerves or their joints are involved, they are made painfully aware of the fact, but far more often they are quite unconscious of being really ill. Having fully grasped this point, we have to ask ourselves: How are we going to detect all these hidden troubles? Invasion of tissues by bacteria, although it may not cause actual pain, causes impulses to be constantly sent to the central nervous system. These impulses, although unconscious, set up an irritation of the general nervous system and are reflected on the mentality of the individual. They are responsible for irritability, depression, moroseness, suspicion and erotic tendencies. Men and women cannot have well-balanced minds in the presence of storms of unconscious stimuli assailing them. There is also the question of chronic toxæmia to be dealt with. What chance has a man, flooded with toxins, in the struggle for existence? Is he not sadly handicapped? His mental activities and his bodily vigour will both be greatly impaired. He will easily be tired and will not be able to throw the fight and energy into his work that he would otherwise be able to do if his body was free from these.

What an extraordinary factor this must be in the success or failure in the lives of many. It must have been the experience of us all to see the marvellous change in a child who has had his or her tonsils removed. Not only do the children put on weight, fill out, get healthy complexions, but they are happier and are capable of doing their school work better, so much so that they often rise rapidly in their form. Yet often all our methods of examination fail to detect any disease.

This has its counterpart in the adult also. As the defence mechanisms of the individual will naturally be called into play, we must expect to find some signs of their over-action. It is now recognized that a group of our endocrine glands, consisting of the thyreoid, adrenals, pituitary and perhaps spleen and liver, have as some of their chief functions those of defence. These are backed up and run hand in hand with the sympathetic nervous system. So in the presence of chronic invasion these systems are constantly overworked. Constant over-action of the thyreoid means increased metabolism and quickening of all vital processes, a tendency to leanness, often to a rapidity of growth and weediness in boys and frequently to a stunted condition in girls. Undue stimulation of the sympathetic nervous system leads to precocity, a highly-strung nervous system which often drives their frail bodies beyond their physical capacity, leading to an early breakdown. At adolescence this sympathetic irritation is largely responsible for a hyperactivity of the erotic tendencies.

I am inclined to believe that the desire for excitement and one endless round of gaieties is as much due to these factors as to the environment. It is impossible to have a well-balanced mind with the sympathetic nervous system being constantly jangled. It means that pleasures are most pleasurable and worries more worrisome. Small stimuli produce great response as the inhibition of the synapses seems lacking. Many of you must have been patients with hysteria and neurosis improve marvellously on their being relieved of some infecting agent. Mental worries are harder to bear, because they lead to periods of depression. Then the pendulum swings the other way and undue optimism holds the field. The stability of mental balance to view all things in a dispassionate light is lacking. All these little things which we have been used to look upon as personal peculiarities, are more often than not signs of disease.

Sir James McKenzie, by close observation of superficial areas of hyperæsthesia and other reflexes, is aiming at the possibility of diagnosing damage to organs possessing no sensory nerves. This, we all hope, will add considerably to our armamentarium.

THE DIURNAL VARIATIONS OF THE DIASTATIC CONTENT OF NORMAL URINE.

BY GORDON CAMERON, M.B., B.S. (MELBOURNE),
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A GREAT degree of accuracy is attained by following the description by Sladden[1] of a method of standardizing the reaction of the urine to a hydrogen ion concentration of pH = 6.7 in the comparison of the diastatic content of urine of varying reactions. The normal diastatic content is generally conceded to be ten to twenty units, occasionally rising as high as thirty units.[2] For the estimation a twenty-four hours' specimen of urine is recognized as being essential and this appears necessary from the results of the following investigation.

The method employed has been as follows: Specimens of urine have been collected at hourly intervals, from 6 a.m. to 7 p.m., the first specimen being the first urine passed in the morning and therefore equivalent to the night excretion. According to the reaction of the urine, whether acid or alkaline, it is titrated with tenth normal sodium hydrate solution or tenth normal hydrochloric acid solution until a faint pink tinge is obtained, phenol-sulphonephthalein being used as the indicator, at this stage the hydrogen ion concentrate being equal to pH 6.7. The amount of diastase is then estimated by making

up varying quantities of the urine, from 0.5 cubic centimetre to 0.05 cubic centimetre to one cubic centimetre with normal saline solution and adding two cubic centimetres of 0.1% starch solution to each dilution, incubating the whole in a water bath at 38° C. for half an hour. The solutions are then tested against a one in fifty iodine solution, the end-point of complete diastatic action being taken as that solution which gives a blue colour with iodine. The number of diastatic units are then obtained by estimating the amount of standard starch solution which is sufficient to prevent the appearance of a blue colour on adding the iodine solution after incubation with one cubic centimetre of the urine. For example, if after incubation the solution containing 0.07 cubic centimetre of urine gave a blue colour, and the tube above did not give a blue colour, this tube would contain two cubic centimetres of starch, which would be sufficient to prevent complete action of the enzyme in 0.08 cubic centimetre of urine, hence $\frac{2 \times 1}{0.08} = 25$ cubic centimetres of starch solution would prevent the appearance of a blue colour after incubation with one cubic centimetre of the urine or there would be twenty-five units of diastase in the urine under examination. In all cases the reaction of the urine to litmus and its specific gravity were noted, the latter being of great importance in showing the relationship to dilution of the urine or otherwise.

The persons investigated were convalescent hospital patients, normal as regards the condition of their excretory and digestive systems.

TABLE I.—CASE I.

The first meal was taken at 7.30 a.m., the second at 11.30 a.m. and the third at 4.30 p.m..

Time.	Diastatic Content of Urine.	Specific Gravity of Urine.	Reaction of Urine.
6 a.m.	33	1,028	Acid
7 a.m.	4	1,025	Acid
8 a.m.	25	1,025	Acid
9 a.m.	20	1,020	Neutral
10 a.m.	4	1,015	Alkaline
11 a.m.	3	1,018	Neutral
12 noon	10	1,020	Acid
1 p.m.	3	1,015	Acid
2 p.m.	3	1,016	Neutral
3 p.m.	25	1,020	Alkaline
4 p.m.	3	1,025	Alkaline
5 p.m.	4	1,018	Acid
6 p.m.	25	1,018	Acid
7 p.m.	10	1,018	Acid

The graph obtained was as in Figure I..

Analysing the results we note (*i.*) a high diastatic content in the early morning urine, (*ii.*) a rapid fall in the content before the first meal, (*iii.*) a rapid rise in the content after the first and third meals (x and z), with a more gradual rise after the second meal (y), a more or less gradual fall succeeding each rise and (*iv.*) a small rise (a) before the second meal.

The diurnal variation, excluding the night excretion, was between twenty-five and three units.

The crests of the waves correspond with low acidity, neutrality or alkalinity, the troughs with an acid reaction. In general with a high diastase value there is a falling specific gravity value and *vice versa*.

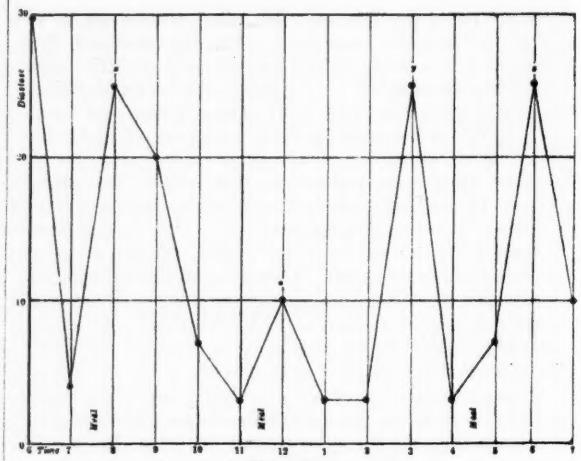

FIGURE I..

TABLE II.—CASE II.

The first meal was taken at 7.30 a.m., the second at 11.30 a.m. and the third at 4.30 p.m..

Time.	Diastatic Content of Urine.	Specific Gravity of Urine.	Reaction of Urine.
6 a.m.	25	1,030	Acid
7 a.m.	3	1,025	Acid
8 a.m.	3	1,025	Acid
9 a.m.	10	1,018	Neutral
10 a.m.	6	1,015	Neutral
11 a.m.	3	1,017	Neutral
12 noon	4	1,020	Acid
1 p.m.	4	1,015	Acid
2 p.m.	10	1,010	Neutral
3 p.m.	20	1,015	Alkaline
4 p.m.	7	1,025	Neutral
5 p.m.	4	1,022	Acid
6 p.m.	20	1,018	Acid
7 p.m.	10	1,018	Acid

The graph obtained was as in Figure II..

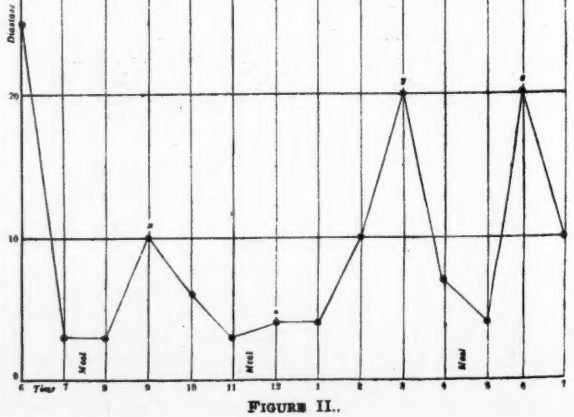

FIGURE II..

Analysing results we note (*i.*) a high diastatic content in the early morning urine, (*ii.*) a rapid fall in the content before the first meal, (*iii.*) a rapid rise in the content after the third meal (*z*), with a more gradual rise after the first and second meals (*x* and *y*), followed by gradual falls in each case, and (*iv.*) a small rise (*a*) before the second meal.

The diurnal variation, excluding the night excretion, was between twenty and three units.

The crests of the waves usually corresponded with low acidity or neutrality, the troughs with acidity. In general the highest specific gravity values were found in conjunction with the lowest diastase values and *vice versa*.

TABLE III.—CASE III.

The first meal was taken at 7.30 a.m., the second at 11.30 a.m. and the third at 4.30 p.m..

Time.	Diastatic Content of Urine.	Specific Gravity of Urine.	Reaction of Urine.
6 a.m.	25	1,028	Acid
7 a.m.	10	1,024	Acid
8 a.m.	25	1,022	Acid
9 a.m.	4	1,017	Neutral
10 a.m.	3	1,012	Neutral
11 a.m.	10	1,018	Neutral
12 noon	28	1,020	Acid
1 p.m.	10	1,016	Neutral
2 p.m.	5	1,015	Neutral
3 p.m.	3	1,010	Alkaline
4 p.m.	7	1,014	Acid
5 p.m.	10	1,018	Acid
6 p.m.	10	1,016	Neutral
7 p.m.	4	1,018	Acid

The graph obtained was as in Figure III..

Analysing the results we note (*i.*) a high diastatic content in the early morning urine, (*ii.*) a rapid fall in the content before the first meal, (*iii.*) a rapid rise in the content after the first and second meals (*x* and *y*), with more gradual rise after the third meal (*z*), followed by a more or less gradual

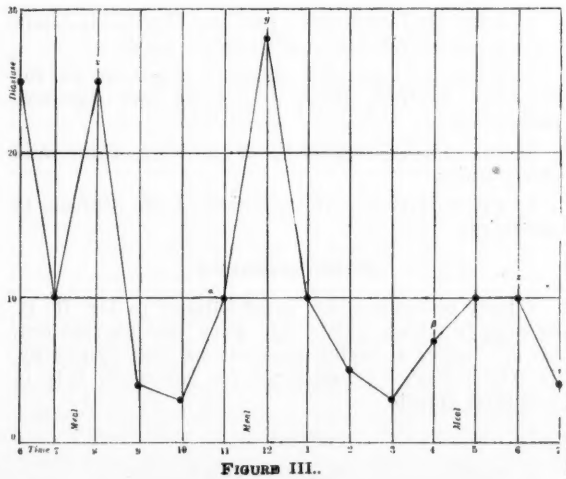

FIGURE III..

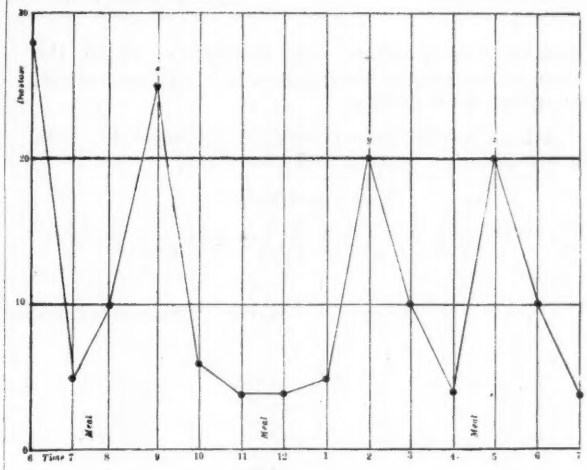

FIGURE IV..

fall after each rise, and (*iv.*) a small rise before the second and third meals (*α* and *β*).

The diurnal variation, excluding the night excretion, was between twenty-eight and three units.

The crests of the waves corresponded with acid reactions, being followed immediately by neutral and alkaline reactions, extending throughout the troughs. The specific gravity curve more or less corresponded with the diastatic curve.

TABLE IV.—CASE IV.

The first meal was taken at 7.30 a.m., the second at 11.30 a.m. and the third at 4.30 p.m..

Time.	Diastatic Content of Urine.	Specific Gravity of Urine.	Reaction of Urine.
6 a.m.	28	1,030	Acid
7 a.m.	5	1,028	Acid
8 a.m.	10	1,025	Acid
9 a.m.	25	1,015	Neutral
10 a.m.	6	1,012	Neutral
11 a.m.	4	1,018	Neutral
12 noon	4	1,024	Acid
1 p.m.	5	1,018	Acid
2 p.m.	20	1,012	Neutral
3 p.m.	10	1,010	Alkaline
4 p.m.	4	1,016	Neutral
5 p.m.	20	1,020	Acid
6 p.m.	10	1,015	Neutral
7 p.m.	4	1,018	Acid

The graph obtained was as in Figure IV..

Analysing results we note (*i.*) a high diastatic content in the early morning urine, (*ii.*) a rapid fall in the content before the first meal, (*iii.*) a gradual rise after the first and second meals (*x* and *y*), with a rapid rise after the third meal (*z*), followed by a more or less gradual fall in each case.

The diurnal variation, excluding the night excretion, was between twenty-five and four units.

The relationship between reaction of urine and diastatic content was not clearly defined, the crests

usually corresponding with neutrality, whilst the troughs sometimes were associated with neutrality, at others with acidity.

A high specific gravity usually corresponded with a low diastase content and *vice versa*.

TABLE V.—CASE V.

The first meal was taken at 7.30 a.m., the second at 11.30 a.m. and the third at 4.30 p.m..

Time.	Diastatic Content of Urine.	Specific Gravity of Urine.	Reaction of Urine.
6 a.m.	28	1,028	Acid
7 a.m.	4	1,026	Acid
8 a.m.	20	1,018	Acid
9 a.m.	10	1,018	Neutral
10 a.m.	5	1,020	Alkaline
11 a.m.	10	1,020	Neutral
12 noon	25	1,018	Acid
1 p.m.	10	1,015	Neutral
2 p.m.	5	1,010	Neutral
3 p.m.	10	1,020	Alkaline
4 p.m.	4	1,024	Acid
5 p.m.	20	1,018	Acid
6 p.m.	7	1,016	Neutral
7 p.m.	5	1,016	Acid

The graph obtained was as in Figure V.

Analysing results we note (*i.*) a high diastatic content in the early morning urine, (*ii.*) a rapid fall in the content before the first meal, (*iii.*) a rapid rise in the content after all meals (*x*, *y* and *z*), followed by gradual falls, and (*iv.*) a small rise before the second and third meals (α and β).

The diurnal variation, excluding the night excretion, was between twenty-five and four units.

The crests of the waves corresponded with acid reactions, the troughs with alkalinity or neutrality.

In general, a high diastatic value corresponded with a falling specific gravity value and *vice versa*.

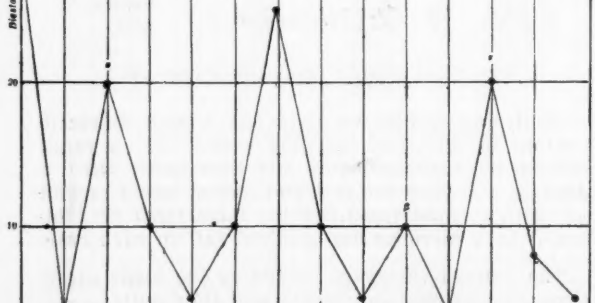

FIGURE V.

General Conclusions.

In the cases examined there are certain common features:

1. The diastatic content of the early morning urine, *id est*, the urine excreted during the night, is high.

2. After a meal the diastatic content reaches a relatively high value, in some cases within a very short interval, such as a half hour, in others more gradually, the maximum usually being reached within one to two hours of the meal.

3. Between meals there is a drop in the diastatic value to within small limits.

4. There appears to be some connexion between the reaction of the urine and the diastatic value, apparently resulting from a factor common to each.

5. Generally, with urine of high specific gravity, there is a low diastase content and *vice versa*.

Hence there appears to be a regular cycle of rise and fall in the diastatic content connected with the digestive process and independent of variations in the dilution of the urine.

From the above conclusions it seems reasonable to assume that the diastase in the urine is derived from some organ or organs closely connected with the function of digestion. The salivary glands and the pancreas at once present themselves as playing an important part. The early rapid rise in the diastatic content, seen in Cases I., III. and V., seem in favour of a salivary gland factor, although the possibility of reflex pancreatic activity must not be forgotten.

The falling diastatic value between meals corresponds with the period of greatest pancreatic activity, the very low value found at the end of three to four hours after a meal probably indicating cessation of pancreatic secretion.

The smaller curves (α) and (β) are difficult of explanation.

Summary.

1. A twenty-four hours' specimen of urine is essential in the estimation of diastatic content.

2. There are marked diurnal variations in the diastatic content, depending upon the digestive process.

3. The normal variation is between three and thirty units.

4. The variation is independent of the dilution of the urine.

Acknowledgements.

I have to express my indebtedness to Dr. R. H. Strong, in whose wards this work was carried out, for his many valuable suggestions and sympathy. To Sister Fisher I owe much for her ready help in practical details.

References.

(1) Sladden, A. F.: *The Lancet*, July 8, 1922.

(2) Garrod, A. E.: *The Lancet*, Volume I., page 749, 1920.

NAPOLEON I.

BY C. MACLAURIN, M.B., C.M., F.R.C.S.E.,
Sydney.

THERE is not and may possibly never be an adequate biography of this prodigious man. It is a truism to say that he has cast a doubt on all past glory; let us hope that he has rendered future glory impossible, for, to judge by the late war, it seems impossible that any rival to the glory of Napoleon can ever arise. In the matter of slaying his fellow-creatures, he appears to have reached the summit of human achievement; possibly also in all matters of organization and administration.

Some persons think that Napoleon was merely an episode—that he had no real influence upon history; it is the custom to point to his career as an exemplification of the thesis that war has played very little real part in the moulding of the course of the world. Into all this we need not now enter, beyond saying that he was the "child of the French Revolution" who killed his spiritual father; the reaction from Napoleon was Metternich, Castlereagh and the Holy Alliance; the reaction from these forces of repression was the late war. So it is difficult to agree that Napoleon was only an "episode." We have merely to remark that he was the most interesting of all men and, so far as we can tell, will probably remain so. As Fielding long ago pointed out in "Jonathan Wild," a man's greatness appears to depend on his homicidal capacity. To make yourself a hero, all you have to do is to slaughter as many of your fellow-creatures as God will permit.

When Napoleon was sent to St. Helena he was followed by a very few faithful friends, who seem to have spent their time in hating one another rather than in comforting their fallen idol. It is difficult to get at the truth of these last few years, because, though most of the eye-witnesses have published their memoirs, each man seems to have been more concerned to assure the world of the greatness of his own sacrifice than to record the exact facts. Therefore, though Napoleon urged them to keep diaries and thereby make great sums of money through their imprisonment, yet these diaries generally seem to have aimed rather at attacking the other faithful ones than at telling us exactly what happened.

The *post mortem* examination of Napoleon's body was performed by Francesco Antommarchi, a young Corsican physician, anatomist and pathologist, who was sent to St. Helena about eighteen months before Napoleon's death in the hope that he, being a Corsican, would be able to win the Emperor's confidence and cure the illness of which he was already complaining. Unfortunately, Antommarchi was a very young man and Napoleon suspected both his medical skill and the reason of his presence. Napoleon used to suffer from severe pains in his stomach; he would clasp himself and groan: *"O, mon pylore!"* By that time he was suffering from cancer of the stomach and Antommarchi did not suspect it. When Napoleon groaned and writhed in agony, it is said that Antommarchi merely laughed and prescribed him tartar emetic in lemonade. Napoleon was violently sick and thought himself poisoned; he swore he would never again taste any of Antommarchi's medicine. Once again Antommarchi attempted to give him tartar emetic in lemonade; it was not in vain that Napoleon had won a reputation for being a great strategist, for, when Antommarchi's back was turned, he handed the draught to the unsuspecting Montholon. In ten minutes that hero reacted in the usual manner and extremely violently. Napoleon was horrified and outraged in his feelings; quite naturally he accused Antommarchi of trying to poison him, called him "assassin" and refused to see him again. Another fault that Napoleon found with the unhappy young man was that, whenever he wanted medical attendance, Antommarchi was not to be found, but had to be ferretted out from Jamestown, three and a half miles away; so, altogether, Antommarchi's attendance could not be called a success. Napoleon in his wrath was "terrible as an army with banners." Even at St. Helena, where the resources of the whole world had been expended in the effort to cage him powerless, it must have been no joke to stand up before those awful eyes, that scorching tongue; and it is no wonder that Antommarchi preferred to spend the last few weeks idling about Jamestown rather than forcing unwelcome attention upon his terrifying patient.

Worst of all, Antommarchi at first persuaded himself that Napoleon's last illness was not serious. When Napoleon cried in his agony, *"O, mon pylore!"* and complained of a pain that shot through him like a knife, Antommarchi merely laughed and turned to his antimony with catastrophic results. It shakes our faith in Antommarchi's professional skill to read that, until almost the very last moment, he would not believe that there was much the matter. The veriest blockhead—one would imagine—must have seen that the Emperor was seriously ill. Many a case of cancer of the stomach has been mistaken for simple dyspepsia in its early stages, but there comes a time when the true nature of the disease forces itself upon even the most casual observer. The rapid wasting, the cachexia, the vomiting, the pain, all impress themselves upon both patient and friends and it is difficult to avoid the conclusion that Antommarchi must have been both careless and negligent. When the inevitable happened and Napoleon died, it was Antommarchi who performed the autopsy and found a condition which it is charitable to suppose may have masked the last symptoms and may have explained, if it did not excuse, the young anatomist's mistaken confidence.

We conclude our brief sketch of the unhappy Antommarchi by saying that when he returned to Europe he published the least accurate and most disingenuous of all accounts of Napoleon's last days. His object seems to have been rather to conceal his own shortcomings than to tell the truth. This book sets the seal on his character and casts doubt on all else that comes from his pen. He may have been, as *The Lancet* says, a "trained and competent path-

ologist"; he was certainly a most unfortunate young man.

The *post mortem* examination was performed in the presence of several British military surgeons, who appear to have been true sons of John Bull, with all the prejudice, ignorance and cocksureness that in the eyes of other nations distinguish us so splendidly. Though truthfulness was not a strong point with Antommarchi, he seems to have known his pathology and has left an exceedingly good and well-written report of what he found. Strange to relate, the body was found to be still covered thickly with a superficial layer of fat and the heart and omenta were also adipose. This would seem incredible in the body of a man who had just died from cancer of the stomach, but is corroborated by a report from a Dr. Henry who was also present and is not unknown. I remember a case of an old woman who, though hardly at all wasted, was found at the autopsy to have an extensive cancerous growth of the pylorus; the explanation was that the disease had been so acute that it slew her before there had been time to produce much wasting. At one point Napoleon's cancerous ulcer had perforated the stomach and the orifice had been sealed by adhesions. Dr. Henry proudly states that he himself was able to thrust his finger through it. The liver was large, but not diseased; the spleen was large and "full of blood"—probably Antommarchi meant engorged. The intestine was covered by small, bright red patches, evidently showing inflammation of lymphatic tissue, such as frequently occurs in general infections of the body. The bladder contained gravel and several definite calculi. There was hardly any secondary cancerous development, except for a few enlarged glands. Antommarchi and the French generally had diagnosed before death that he was suffering from some sort of hepatitis endemic to St. Helena and the cancer was a great surprise to them—not that it would have mattered much from the point of view of treatment. Napoleon's hands and feet were extremely small; his skin was white and delicate; his body had feminine characteristics, such as wide hips and narrow shoulders; his reproductive organs were small and apparently atrophied. He is said to have been impotent for some time before he died. There was little hair on the body and the hair of the head was fine, silky and sparse. Twenty years later his body was exhumed and taken to France and Dr. Guillard, who was permitted to make a brief examination, stated that the beard and nails appeared to have grown since death; there was very little sign of decomposition. Men who had known him in life, recognized his face immediately it was uncovered.

Leonard Guthrie points out that some of these signs seem to indicate a condition of hypo-pituitarism—the opposite to the condition of hyperpituitarism, which causes "giantism." Far-fetched as this theory may appear, yet it is possible that there may be something in it.

The autopsy showed beyond cavil that the cause of death was cancer of the stomach and it is difficult to see what more Antommarchi could have done in the way of effective treatment than he did, although certainly an irritant poison like tartar emetic would not have been good for a man with cancer of the stomach, even if it did not actually shorten his life. But Napoleon was not a good patient. He had seen too much of army surgery to have a great respect for our profession; indeed, it is probable that he had no respect for anybody but the Emperor Napoleon. He, at least, knew his business. He could manœuvre a great army in the field and win battles—and lose them too. Even a lost Napoleonic battle—there were not many—was better managed than a victory of any other man; whereas when you were dealing with these doctor fellows you could never tell whether their results were caused by their treatment or by the intervention of whatever gods there be. Decidedly Antommarchi was the last man in the world to be sent to treat the fallen but still imperious warrior.

The symptoms of impending death seem to have been masked by a continued fever and probably Antommarchi was not really much to blame. This idea is to some extent borne out by a couple of specimens in the Museum of the Royal College of Surgeons, which are said to have belonged to the body of Napoleon. The story is that they were surreptitiously removed by Antommarchi and handed by him to Barry O'Meara, who in his turn gave them to Sir Astley Cooper. That baronet handed them to the museum, where they are now preserved as of doubtful origin. But their genuineness depends upon whether we can believe that Antommarchi would or could have removed them and whether O'Meara was telling the truth to Sir Astley Cooper. It is doubtful which of the two first-mentioned men is the less credible and Cooper could not have known what a liar O'Meara was to show himself or he would probably not have thought for one moment that the specimens were genuine. O'Meara was a contentious Irishman who, like most other people, had fallen under the sway of Napoleon's personal charm. He published a book in which he libelled Sir Hudson Lowe, whose hard fate it was to be Napoleon's gaoler at St. Helena—that isle of unrest. For some reason Lowe never took action against this traducer until it was too late, so that his character, like most things connected with Napoleon, still remains a bone of contention. But O'Meara had definitely put himself on the side of the French against the English and it was the object of the French to show that their demigod had died of some illness endemic to that devil's island, aggravated by the barbarous ill-treatment of the brutal British. We, on our side, contended that St. Helena was a sort of earthly paradise where one should live forever. The fragments are from somebody's ileum and show little raised patches of inflamed lymphoid tissue; Sir William Leishman considers the *post mortem* findings, apart from the cancer, those of some long-continued fever, such as Mediterranean fever.

Mediterranean or Malta fever is a curious specific fever due to the *Micrococcus melitensis*, which shows itself by recurrent bouts of pyrexia, accompanied by constipation, chronic anæmia and wasting. Between the bouts the patient may appear perfectly well.

There are three types—the "undulatory," here described; the "intermittent," in which the attacks come on almost daily; and the "malignant," in which the patient only lives for a week or ten days. It is now known to be contracted by drinking the infected milk of goats and it is almost confined to the shores of the Mediterranean and certain parts of India. It may last for years and it is quite possible that Napoleon caught it at Elba, of which Mediterranean island he was the unwilling Emperor in 1814. Thence he returned to France, as it was said, because he had not "elba-room" on his little kingdom. It is certain that for years he had been subject to feverish attacks, which army surgeons would now possibly classify as "P.U.O." and it is quite possible that these may in reality have been manifestations of Malta fever.

It has been surmised by some enthusiasts that the frequency of micturition, followed by dysuria, to which he was liable, may have really been due to hyperpituitarism. Whenever we do not understand a thing, let us blame a ductless gland; the pituitary body is well hidden and its action is still not thoroughly understood. But surely we need no further explanation of this miserable symptom than the stones in the bladder. Napoleon for many years might almost be said to have lived on horseback and riding is the very thing to cause misery to a man afflicted with vesical calculus. Dysuria attendant upon frequency of micturition is a most suggestive symptom; nowadays we are always taught to consider the possibility of stone and it is rather surprising that nobody seems to have suspected it during his lifetime. This could be very well accounted for by remembering the general ignorance and incompetence of army surgeons at the time, the mighty position of the patient and his intolerance of the medical profession. Few men would have dared to suggest that it would be well for him to submit to the passage of a sound, even if the trouble ever became sufficiently urgent to compel him to confide so private a matter to one so lowly as a mere army doctor. Yet he had known and admired Larrey, the great military surgeon of the Napoleonic wars; one can only surmise that his calculi did not give him much trouble, or that they grew more rapidly in the sedentary life which he led at St. Helena.

During the last year or so he took great interest in gardening and spent hours in planting trees, digging the soil and generally behaving somewhat after the manner of a suburban householder. He was intensely bored by his forced inaction and used to take refuge in chess. His staff at first welcomed this, but unhappily they could find nobody bad enough for the mighty strategist to beat. Nobody dared to give him checkmate and it was necessary to lose the game foolishly rather than to defeat Napoleon. It is clear that the qualities requisite for a good chess-player are by no means the same as those necessary to out-manœuvre an army.

Throughout his life his pulse-rate seldom exceeded fifty per minute; as he grew older he was subject to increasing lassitude; his extremities felt constantly chilly and he used to lie for hours daily in hot-water baths. Possibly these may have been symptoms of hypopituitarism; Lord Rosebery follows popular opinion in attributing his laziness to the weakening effects of hot baths. Occasionally Napoleon suffered from attacks of vomiting, followed by extreme fits of lethargy. It is quite possible that these vomiting attacks may have been due to the gastric ulcer, which must have been growing for years, until, about September, 1820, it became acutely malignant.

The legend that Napoleon suffered from epilepsy appears, according to Dr. Ireland, to rest upon a statement in Talleyrand's memoirs. In September, 1805, in Talleyrand's presence Napoleon was seized after dinner with a sort of fit and fell to the ground, struggling convulsively. Talleyrand loosened his cravat, obeying the popular rule in such circumstances to "give him air." Remusat, the chief chamberlain, gave him water, which he drank. Talleyrand returned to the charge and "inundated" him with *eau de Cologne*. The Emperor awakened and said something; one would like to know what he said when he felt the inundation streaming down his clothes—probably something truly of the camp. Half an hour later he was on road that was to lead him—to Austerlitz, of all places! Clearly this fit, whatever it may have been, was not epilepsy in the ordinary sense of the term. There was no "cry," no biting of the tongue, no foaming at the mouth and apparently no unconsciousness. Moreover, epilepsy is accompanied by degeneration of the intellect and nobody dares to say that Austerlitz, Jena and Wagram—to say nothing of Aspern and Eckmuhl—were won by a degenerate. Eylau and Friedland were also to come after 1805 and these seven names still ring like a trumpet for sheer glory, daring and supreme genius. I suppose there is not one of them—except perhaps Aspern—which would not have made an imperishable name for any lesser general. It is impossible to believe that they were fought by an epileptic. If Napoleon really had epilepsy, it was assuredly not the *"grand mal"* which helps to fill our asylums. It is just possible that *"petit mal"* may have been in the picture. This is a curious condition which manifests itself by momentary loss of consciousness; the patient may become suddenly dreamy and purposeless and perform curious involuntary actions while apparently conscious. When he recovers, he knows nothing about what he has been doing and may even resume the interrupted action which had occupied him at the moment of the seizure. Some such explanation may account of Napoleon's fits of furious passion that seem to have been followed by periods of lethargy and vomiting. It is a sort of pleasing paradox—and mankind dearly loves paradox—to say that supremely great men suffer from epilepsy. It was said of Julius Cæsar, of St. Paul and of Mahomet. These men are said to have suffered from "falling sickness," whatever that may have been; there are plenty of conditions which may make men fall to the ground, without being epileptic. Ménière's disease, for instance. It is ridiculous to suppose that Julius Cæsar and Napoleon—by common consent the two greatest of the sons of

men—should have been subject to a disease which deteriorates the intellect.

It is possible that some such trouble as *"petit mal"* may have been at the bottom of the curious stories of a certain listless torpor that appears to have overcome Napoleon at critical moments in his later battles. Something of the kind happened at Borodino in 1812, the bloodiest and most frightful battle in history. Napoleon indeed won, in the sense that the exhausted Russians retreated to Moscow, whither to pursued them to his ill-fortune; but the battle was not fought with anything like the supreme genius which he displayed in his other campaigns. Similarly, he is said to have been thus stricken helpless after Ligny, when he defeated Blücher in 1815. He wasted precious hours in lethargy, which should have been spent in his usual furious pursuit of his beaten foe. To this day the French hold that, but for Napoleon's inexplicable idleness after Ligny, there would have been no St. Helena; and, with all the respect due to Wellington and his thin red line, it is by no means certain that the French are wrong. But nations will continue to squabble about Waterloo till there shall be no more war; and in 1814 he had fought the most brilliant of all campaigns.

"Of woman came the beginning of sin and through her therefore we all die," said the ungallant author of Ecclestiasticus; and it is certain that Napoleon was extremely susceptible to feminine charms. Like a Roman Emperor, he had but to cast a glance at a woman and she was at his feet. Yet probably his life was not very much less moral than was customary among the great at that time. When we remember his extraordinary personal charm, it is rather a matter for wonder that women seem to have had so little serious effect upon his life and he seems to have taken comparatively little advantage of his opportunities. His first wife, Josephine Beauharnais, was a flighty Creole who pleased herself entirely; in the vulgar phrase, she "took her pleasure where she found it." To this Napoleon appears to have been complaisant, but, as she could not produce an heir to the dynasty which he wished to found, he divorced her and married the Austrian princess, Marie Louise, whose father he had defeated and humiliated as few sovereigns have ever been humiliated. She deserted him without a qualm when he was sent to Elba; when he was finally imprisoned at St. Helena there was no question of her following him, even if the British Government had had sufficient imagination to permit such a thing. Napoleon, who was fond of her, wanted her to go with him; but one could not expect a Government containing Castlereagh, Liverpool and Bathurst to show any sympathy to the fallen foe who had been a nightmare to Europe for twenty years. She would never consent to see Josephine. It is said that Napoleon's *libido sexualis* was violent, but rapidly quelled. In conversation at St. Helena he admitted having possessed seven mistresses; of them he said simply *"C'est beaucoup!"* When he was sent to St. Helena his mother wrote and asked to be allowed to follow him; however great a man's fall, his mother never deserts him and asylum doctors find that long after the wife or sisters forget some demented and bestial creature, his mother loyally continues her visits till the grave closes over one or the other. But more remarkable is the fact that Pauline Bonaparte, who was always looked upon as a shameless hussy, would have followed him to St. Helena, only that she was ill in bed at the time. She was the beautiful sister who sat to Canova for the statue of Venus in the Villa Borghese. It was then thought most shocking for a lady of high degree to be sculptured as a nude Venus—perhaps it is now; I say, perhaps. There are few ladies of high degree so beautiful as Princess Pauline, as Canova shows her. A friend said to her about the statue: "Were you not uncomfortable, princess, sitting there without any clothes on?" "Uncomfortable?" said Princess Pauline delightfully. "Why should I be uncomfortable? There was a stove in the room!" There are many other still less creditable stories told about her. It was poor, beautiful Pauline who lost her husband of yellow fever, herself recovering of an attack at the same time. She cut off her hair and buried it in his coffin. This was thought a wonderful instance of wifely devotion, until the cynical emperor remarked: "Quite so; quite so; of course she knows it will grow again better than ever for cutting it off and that it would have fallen off anyhow after the fever." Yet when he was sent to Elba this frivolous sister followed him and she sold every jewel she possessed to make life comfortable for him at St. Helena. She was a very human and beautiful woman, this Pauline; she detested Marie Louise and once in 1810 at a grand fête, she saucily poked out her tongue at the young Empress in full view of all the nobles. Unhappily, Napoleon saw her and cast upon her a dreadful look; Pauline picked up her skirts and ran headlong from the room. When she heard of his death she wept bitterly; she died four years afterwards of cancer. Her last action was to call for a mirror, into which looking she died, saying: "I am still beautiful; I am not afraid to die."

In attempting to judge Marie Louise it must be remembered that there is a horrid story told of Napoleon's first meeting with her in France after the civil marriage had been performed by proxy in Vienna. It is said that the fury of his lust did her physical injury and that that is the true reason why she never forgave him and deserted him at the first opportunity. She bore him a son, of whom he was passionately fond, but after his downfall the son—the poor little King of Rome immortalized by Rostand in "lAiglon"—fell into the hands of Metternich, the Austrian, who is said to have deliberately contrived to have him taught improper practices, lest he should grow up to be as terrible a menace to the world as his father. But all these are pure rumours and show how difficult it is to ascertain the truth of anything connected with Napoleon.

When Napoleon fell to the dust after Leipzig, Marie Louise became too friendly with Count von Neipperg, whom she morganatically married after Napoleon's death. Although he heard of her infidelity, he forgave her and mentioned her affection-

ately in his will, thereby showing, to borrow a famous phrase of Gibbon about Belisarius, "either less or more than the character of a man."

For nine days before he died he lay unconscious and babbled in delirium. On the morning of May 5, 1821, Montholon thought he heard the words: *"France . . . armée . . . tête d'armée."* The dying Emperor thrust Montholon from his side, struggled out of bed and staggered towards the window. Montholon overpowered him and put him back to bed, where he lay silent and motionless till he died the same evening. The man who had fought about sixty pitched battles, all of which he had won, I believe, but two; who had caused the deaths of three millions of his own men and untold millions of his enemies, died as peacefully in his bed as any humble labourer of Woolloomooloo. What dim memories passed through his clouded brain as he tried to say "Head of the army?" A great tropical storm was threatening Longwood. Did he recall the famous "sun of Austerlitz" beneath whose rays the *"grande armée"* had elevated its idolized head to the highest pitch of earthly glory? Who can follow the queer paths taken by associated ideas in the human brain?

Reports of Cases.

EXTENSIVE BRONCHIOLECTASIS IN A YOUNG CHILD.

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IN childhood it is not uncommon for a portion of a lung to be affected by chronic interstitial changes supervening on one or more attacks of acute broncho-pneumonia.

As a rule the bronchioles of the affected part of the lung become dilated to a greater or less degree.

I am indebted to Dr. C. de Crespigny, Honorary Physician to the Adelaide Children's Hospital, for permission to use the clinical notes on the following case of a child who had changes such as those mentioned above affecting almost the whole of both lungs:

R.H., a boy, aged two years and seven months, was admitted to hospital on January 3, 1922, practically *in extremis*, with extreme breathlessness and cyanosis and a very rapid, weak, irregular pulse. His temperature was 36.4° C., his pulse rate 180 and his respiratory rate 60. The chest was in the position of extreme inspiration and the respiratory excursion was very small, as in severe asthmatic attack. On auscultation rhonchi were heard all over the chest and moist sounds posteriorly and at the bases. The heart sounds were weak and difficult to detect on account of the loud râles. The digits showed a considerable degree of clubbing. Oxygen was administered and stimulating measures applied, but death occurred in a few hours.

The history was that the child had been normal and healthy until it reached the age of ten months, when whooping cough was contracted. This disease resulted in a prolonged illness and since then the child's respiration had always been somewhat heavy and its colour had tended to be blue.

At one year and nine months the child suffered from scarlet fever and at two years and four months it developed measles. From the time it recovered from whooping cough, it suffered from attacks of severe breathlessness lasting for several days as a rule. The final attack commenced eleven days before death and became continuously worse.

At autopsy the lungs were found to be greatly distended, especially the upper lobes, and there was little or no tendency for them to collapse, even on applying pressure. In places especially about the anterior margins there were air blebs as much as two centimetres in diameter.

Posteriorly and laterally there were definite areas of engorgement and consolidation. In sections of the lungs areas of consolidation varying in colour from pink to dark red were seen to be scattered irregularly through the lower lobes and posterior portion of the upper lobes. As a rule dilated bronchioles full of muco-pus could be seen in the centre of these areas. In addition the bronchioles were almost everywhere dilated to two or three times the normal size and sometimes to a much greater degree and all contained viscid muco-pus. The larger bronchial tubes were not much altered, although here and there they were slightly enlarged and their mucosa was everywhere engorged. There were no pleural adhesions.

The heart showed a considerably dilated right auricle and a moderately hypertrophied right ventricle. The liver and kidneys were dark purplish from engorgement. No signs of tuberculous disease could be found anywhere.

The microscopical findings were as follows:

Lungs.—The emphysematous portions contained very large, irregular air spaces with thin walls. In the alveolar epithelium there were areas of desquamation. The bronchial tubes were thickened and surrounded by an unusual amount of fibrous tissue. There was irregular increase in the interstitial fibrous tissue. The consolidated portions were made up of irregularly disposed areas in which the greater part of the alveolar outlines had been obliterated and the alveoli replaced by a somewhat loose connective tissue containing dense collections of round cells (lymphocytes).

The collections of round cells occurred especially in the neighbourhood of greatly distended bronchioles. The bronchioles were in many instances dilated to many times their normal size and their walls consisted practically of fibrous tissue, lined internally by a low columnar epithelium, the latter being incomplete in many places. Throughout the lungs were irregular areas of fibrous tissue.

The pus from the tubes was examined by direct smear and culture and numerous pneumococci were demonstrated, but no other micro-organisms.

No micro-organisms were demonstrated in the tissues when sections were stained. Examination was made for tubercle bacilli and the *Spirochæta pallida*, but none was found. There was no special reason to suspect either and the examination was made rather for the sake of completeness.

The liver, kidneys and spleen did not show any changes beyond engorgement.

It would appear that the interstitial pulmonary changes must have commenced at the time the child had whooping cough and continued progressively with exacerbations until the final illness.

The formation of a viscid secretion was an important factor in producing the fatal result, for at autopsy it was evident that a large number of the bronchioles had become virtually blocked, the muco-pus acting in a valvular way, at first allowing entrance of air, but hindering its exit to a considerable degree and finally producing a fixed overdistension of the alveoli. The resemblance of the case clinically to one of severe asthma is thus readily seen.

Such cases are certainly uncommon; I have not encountered any definite reference to the condition.

Reviews.

LAWSON TAIT.

BIOGRAPHIES of two eminent medical men have recently been published; one of Lord Lister by his nephew, Rickman J. Godlee, the other of Lawson Tait by his former pupil, Stewart McKay.[1] These two interesting books may well be read turn about, for in a way they are complementary to each other. Both are excellent, but the former, dealing with the life of one of the greatest benefactors of the human race, is rightly written not only for medical

[1] "Lawson Tait: His Life and Work," by W. J. Stewart McKay, M.B., M.Ch., B.Sc.; 1922. London: Baillière, Tindall & Cox; Royal 8vo., pp. xii. + 578, with 34 plates. Price: 25s. net.

men, but also for the general public, some of whom actually have the curiosity to wish to know something of the life and labours of one whose existence in this world has profoundly bettered the practice of surgery for all time. The other biography concerns a lesser man—and, dealing mostly with purely technical subjects and in a technical way, can be only of full interest to the medical profession. Nevertheless, the life history of such a man as Tait, "who, with all his faults, and they were neither few nor small," was a great man—not a bad man—and one who did lasting and original work, deserves record. Such a man's life must and ought to be of interest and instruction to everyone who takes an interest in his profession generally and in the development of abdominal surgery in particular. Indeed, it is not improper to say that Dr. Stewart McKay's work on his master, a labour of love and duty, as it evidently is, deals as much or more with the broad subject of the "history of abdominal surgery and gynæcology" as the personal life of Mr. Tait. This aspect of the work is not lost sight of by the author, who uses these very words as a sub-title for his most readable and illuminating performance. If the object of a biography is to present to the reader a pen-portrait of his object as an actual personality of real life—alive and convincing—without undue praise, where praise is possible, and without undue censure, where censure is deserved, as it certainly sometimes is in the life before us, then it may be said that the writer has succeded in his task. The reader might wish that he could have avoided the retention of the pontifical use of the pronoun "we," which is a little irritating at times.

To those who remember Lawson Tait in his most aggressive period and also some of those with whom Tait wrangled and occasionally mangled, the picture Dr. McKay has drawn seems just, sane, well-balanced and, so far as these dead controversies remain, he seems to sum up the ultimate verdict of medical posterity correctly in Tait's favour. Of Tait, the man, it is clear from this work, the labour of love of an admirer and assistant, that the popular idea of the great surgeon was and is fairly correct. Even as his portraits suggest, so was his character—masterful, aggressive, capable, coarse and in controversy somewhat unscrupulous and personal. Compare his features with the refined and benign face of Lister and think of Lister's passionate, yet persistent and calm strivings after truth. Compare these points with Tait's controversial writings and speeches, which were far otherwise. Both, indeed, sought the truth, but Tait loved the truth or its apparent equivalent perhaps best when he found it over the disgruntled feelings of those with whom he differed. Prejudice confounded his judgement, in at any rate two deplorable obsessions, his opposition to Listerism and his anti-vivisection campaign. It is pitiful after more than thirty years to see how both Lister and Tait were travelling along the same excellent way to surgical safety; one, perhaps the greatest of scientific surgeons, with his beneficent path lit by the true light of the knowledge of sepsis; the other, refusing to accept that which men with far less brains and prescience were able to grasp and to use and so carry on the new knowledge to still vaster issues. In a book like this, in which there is so much to praise, it is perhaps a little ungracious to find fault. Yet it is too long. It might easily have been shorter and yet lose nothing of completeness thereby. Much space not really pertinent to the biography is taken up with matters of ancient gynæcology. That subject has already been dealt with by the author in a former work and has no real place in this one. Again, no less than ten profusely illustrated pages are devoted to Tait's perineal operations—a matter on which likewise Dr. McKay has already written. A biography like this is not a partial text-book of gynæcology, even if it does deal with the life's work of a gynæcologist. There are other matters where the pruning hook would have done no harm, but these two are the most prominent.

The story of the evolution of pedicle treatment in ovarian and uterine ablation is complete and quite admirable. In this connexion it is of interest to read his account of Keith's handling of the clamp and cautery. He tells us of the fifteen to twenty minutes spent by Keith over the intra-peritoneal treatment of the ovarian pedicle. Keith seared through the pedicle, held in the grip of the clamp; but then he kept on applying the cautery to the crushed stump and brushing off the tiny superficial eschar till the spectators wearied "and thought Keith finnical." Tait has pointed out that Keith's prolonged brushings with the cautery and rubbings of the stump resulted, not in an eschar, but rather in a piece of parchment-like tissue which had become cooked by the moderate heat of the cautery acting through the metal clamp.

Tait evidently suffered from the swank of simplicity. The little scalpel, the tiny incision, the bit of string, a few catch forceps and a deal board on two tresles quite made the "simple life" of surgery. He did not know of the very present help in trouble which the position of Trendelenburg gives to the anxious seeker in the depths of the pelvis. Well, these simple means sound excellent and provoke our respectful admiration all the more for what he accomplished with them, but we are not all Lawson Taits and so there is still something to be said in favour of a modern operating theatre, an adjustable table and many other adjuncts which help weaker brethren to clean surgery. Yes, even though some of us, in a reactionary mood, do sometimes smile over the "pullulating rites, extern and vain," which may be seen practised not seldom in all their impressive glory by acolytes in gloved hands and veiled faces; but even such aids to faith lose their value if the tissues are torn and not caressed and if judgement and common sense are not fully in evidence. Tait, it may be said in his defence, suffered much from some of his followers, who did not mix their practice with their master's brains, especially perhaps in the matter of removal of the appendages. However, time, at the expense of many healthy ovaries, has righted these contentions years ago.

Dr. McKay is hardly historically happy when he tells us "that Australians do not allude with pride to any of their ancestors who came to Australia with Captain Cook." Surely he would have been more correct if he had said Captain Philip!

Tait's love of wrangling was deplorable. Surely he might have lived his useful life without eternally trailing his coat. His personality in debate often amounted to simple, vulgar rudeness. For example, at a meeting of a London medical society, a well-known, elderly surgeon remarked that they should not take too much notice of the views propounded by Mr. Tait, because they all knew he was a man of strong prejudices. Tait rose to reply; standing with his hands on the chair occupied by the last speaker, he did not enter into the points at issue, but merely said: "Gentlemen, I have been accused of being prejudiced. Let me assure you that I have only one prejudice in this world and that is against a man who dyes his hair!" This old gentleman in front of him, alas, had resorted to cosmetic aids to defeat time.

It is strange to hear from Dr. McKay that in his religious views he seemed to have "a distinct leaning towards the Roman Catholic Church."

And now, to sum up in brief the life's work of this virile and interesting man. He was ruthless in his desire for fame and credit; he was prejudiced, aggressive, pigheaded and often unpleasant. Yet we must forgive him many things for the great things he accomplished. Indeed, he does seem to merit the praise which William Mayo gives him in that "he was the father of modern abdominal surgery." And what in brief, then, were the works which, living after him, justify so high a title from one who is himself a master-craftsman in the same field of skill? Between 1872, when he was the first to remove deliberately an ovary for disease, till 1877, when he clearly showed how to treat cysts of the urachus, he worked incessantly. He first performed successfully the operation of cholecystotomy in Europe about the year 1879. Earlier than that he ingeniously replaced the inverted uterus by an original repositor. In 1879 he did an epoch-making operation with success, an abdominal section for pyo-salpinx. This led to the correct treatment of diseases of the uterine appendages. It might be said that from the pelvis spread upwards the enlargement of the field of abdominal surgery. This may be regarded as his greatest achievement.

Australians ought also to know that he it was who first successfully operated on an hydatid cyst of the liver in Great Britain. In 1883 he first opened the abdomen and dealt with a ruptured ectopic pregnancy, saving thereby untold numbers of lives. These things and much else did Lawson Tait do. Truly indeed, a great output. "He toiled terribly," his cargo was rich, his "voyage was made" and we are the heirs of its profits.

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A Retrospect.

Morphology.

MEDICAL practitioners are apt to regard work connected with anatomy and morphology as if these subjects had little or no bearing on the problems of disease. The foolish habit of requiring students to "do" their anatomy and biology at the beginning of their course, even though this entails the forgetting of much useful information before they have time to graduate in medicine, fosters the false conception that these subjects scarcely concern the practitioner in his daily work. A proper understanding of the pathology and ætiology of many diseases is based to a considerable extent on a knowledge of embryological processes and of anatomical structure in its relation to function. To ignore increments of knowledge of fundamental facts means to refuse to build on a solid foundation.

Among the more important articles published in the journals of anatomy, one by J. L. Shellshear and R. A. Dart, two Australian anatomists, on the mesodermal origin of the anterior horn cells of the neural tube commands attention and appreciation. If their conclusions are confirmed by subsequent investigators, the work will occupy a prominent position in comparative vertebrate embryology. They have reason to doubt the correctness of the conception that the ectodermal or neural tube has its origin in the motor neuroblasts. They have adduced a considerable amount of evidence to show that the anterior horn cells of the brain and spinal cord arise from the myotomes. In the course of their work they have proposed a refinement of the usual nomenclature in connexion with the components of the reflex arc. It is suggested that a simple reflex arc consists of a receptor or sense organ, a transmittor or sensory neurone, the sensorium, an effector or motor neurone and an expressor or organ acted upon, usually a muscle.

F. L. Landacre and C. P. Stone, two American workers, have endeavoured to prove that the neural crest region of the embryonic nervous tube gives rise not only to sensory ganglia, but also to the structures in the branchial arches, hitherto regarded as mesodermal. Similar evidence had been collected several years ago by Miss Platt, but her work at that time aroused considerable opposition. It thus appears that these workers are slowly breaking down the doctrine of a specific origin of nervous tissue from ectoderm, or, in other words, of the specificity of the germ layers.

A large amount of work has been carried out in connexion with the growth and differentiation of the human brain and of the sympathetic system. Some important data have been recorded concerning the anatomy of the nervous system and of the special sense organs of some insects.

C. F. W. Maclure has endeavoured to determine the relationship between endothelium and mesenchyme. For several years he and others have paid especial attention to Sabin's hypothesis of the angioblastic origin of endothelium. Little by little he has collected arguments in favour of the so-called local origin theory of endothelium. It would seem that the endothelium of the lymphatic and blood vessels is derived from mesenchyme, either by active migration and alignment or by a process of differentiation from single mesenchyme cells. It is interesting to note that, according to the work of W. H. Lewis, embryonic mesenchyme is not a syncytium, although studies of stained and fixed material lent support to such a view. The evidence on which the newer hypothesis has been based, is derived from observations of tissue cultures.

Arthur Keith has contributed two highly interesting and important morphological studies. In his Herter Lecture he traced the characters of acromegaly which is attributable to a disturbance of the pituitary hormone and compares them with the bony characters of certain apes and of some of the earliest types of primitive men. As a result of very careful and astute observation he has arrived tentatively at the conclusion that certain racial characteristics arise as a result of the action of pituitary, thyreoid or suprarenal hyperactivity. This association of racial characters and hormones is at once

fascinating and significant and, if supported by further evidence, will lead the way to an extension of knowledge on the part played by the glands of internal secretion, both in the maintence of health and in determining the nature of impaired function in disease. His other work, published in conjunction with G. C. Campion, is concerned with the mechanism of the growth of the bony structure of the face. In this study attention has been given to racial and national types and to the direction and form of growth under the influence of stimulation of varying kinds. The study is admittedly incomplete, but has progressed sufficiently to indicate the immense importance it will have in orthodontia. Other investigators have directed their energies toward the elucidation of problems connected with the effect of hormones on the structures and function of the developing embryo. Some of this work is of good quality and much of it is tending to remove the mysticism which has surrounded the whole subject of endocrinology.

In anthropology perhaps the most notable achievement is the recent, as yet unpublished reconstruction of the Piltdown skull by Elliott Smith and John I. Hunter. The lower jaw has been brought into harmony with the remainder of the fragments. The Piltdown man has been shown to have been a true "down man," with a brain capacity approximately the same as that of the earlier reconstructions. The occiput, however, is tilted like that of the anthropoid ape rather than in the manner indicated in Smith Woodward's reconstruction. Mention should be made of the fact that Smith Woodward is describing the now famous Rhodesian skull.

Neurology.

In reviewing the year's heavy output of writing on neurological and allied subjects we may first notice the proceedings of the Neurological Society of Paris. Here, the subject of the pituitary gland and its bearing on neurology was chosen for discussion and Jean Camus and Gustave Roussy related experimental results to show that it is not the pituitary gland, but hitherto unrecognized nuclei lying immediately above, which control those important biological processes affecting corporeal development, the onset of diabetes and so on previously referred to the pituitary gland. Before these revolutionary conclusions are finally accepted, it has to be proved that extra-pituitary lesions involving those nuclei do not operate by interfering with the channel of connexion between pituitary and ventricle.

Concerning encephalitis, particularly the lethargic form, observers have dealt chiefly with after-effects and prolongations, which include Parkinsonian or catatonic manifestations (Souques), choreiform movements (P. Marie and J. Levy), a neuritic form and a pseudo-bulbar form. The Parkinsonian manifestations bring together conceptions concerning the functions of the *corpus striatum*, emphasized by the work of the Déjerines, Kinnier Wilson and Ramsay Hunt, and have allowed Souques to formulate the view that *paralysis agitans* is not a disease *per se*, but a syndrome which may result from a number of different causes affecting a localized portion of the nervous system.

Lewy and others have begun an attack upon the neurology of metabolism and shown the importance of mesencephalic structures in the integration of visceral functions. By others our knowledge of viscero-motor reflexes has been made more complete; also the work of André Thomas on the pilo-motor reflex deserves special mention.

The relation between the sympathetic nervous system and the endocrine glands continues to receive attention, but in the present state of our knowledge there is reason for reserve before accepting conclusions.

A fascinating speculation regarding amœbism of nerve cells is current (Lépine, Morat *et cetera*) and may explain various conditions, such as hysteria, neurasthenia and sleep. The idea is that the nerve cells react like an amœba, isolating themselves by withdrawing their dendrites from surrounding neurones.

The treatment of neuro-syphilis was one topic chosen for discussion by the British Medical Association at the Annual Meeting held in Glasgow and regarding tabes and general paralysis, Kinnier Wilson, Frederick W. Mott and Aldren Turner expressed doubt whether modern arsenical treatment was better than mercurial inunction.

In the field of insanity F. W. Mott's work on *dementia præcox*, aimed at establishing disturb-

ance of sexual gland function as an essential pathological concomitant, has attracted most attention. It is also beginning to be recognized that lunacy is a legal, not a medical, term, that it refers only to the certifiable and that outside these the host of delinquents, drug-takers, inadequate personalities, social misfits and so on call for adequate recognition and treatment.

On psycho-analysis and psycho-pathology more has been written than can be brought within the compass of this retrospect.

Orthopædic Surgery.

During the past twelve months or more the problems associated with the disabilities dependent on the unstable paralytic foot have led orthopædic surgeons to undertake much experimental work. Michael Hoke and Naughton Dunn have resected the tarsus to overcome the crippling due to lateral instability. Their efforts have been attended by considerable success. In antero-posterior instability resection of the tarsus to permit displacement of the foot posteriorly, together with fixation of the *tendo calcaneus* and in certain cases of other tendons as well, promises to give relief. The condition known as pseudo-coxalgia has recently been the subject of a special research by Harry Platt. He has arrived at the opinion that the disease is due to an infective agent of attenuated potency. In adults a similar infection is said to give rise to *arthritis deformans*.

R. W. Lovett's contribution to the study of infantile paralysis during the past year has been very illuminating. He has had the opportunity of watching the process of recovery of paralysed muscles during a period of three years. His observations indicate that the abdominal muscles have the smallest chances of recovery and that the chances of recovery of the muscles of the lower limb diminish with the descent toward the foot. The occurrence of deformity and the strain caused by weight-bearing on the lower limb are the chief factors in interfering with the healing process in recovering muscles.

Sterling Bunnell has turned his attention to the intricate subject of the repair of the finger tendons after injury. From his published records it would seem that the care expended in the treatment of these injuries was justified. S. L. Haas has recorded his observation on the viability of transplanted bone. Repair can be demonstrated in grafts that have been fractured and then placed in contact with muscular tissue. P. Turner Thomas, stimulated by an investigation by Quénu, examined several patients with posterior dislocation of the ankle and discovered in every instance an accompanying fracture of the tibia. He ventures to assert that this fracture occurs in association with every posterior disolcation of the ankle and draws attention to the advisability of treating this dislocation in the dorsi-flexed position.

The transplantation of fascia and tendon in various deformities and conditions of paralysis has been advocated by W. E. Gallic and A. B. le Messurier. Their studies of the manner of healing of fibrous tissue and the application of their results to various orthopædic procedures are of importance.

Limitation of movement of the knee joint is often due to the contraction of the *quadriceps* muscle. G. E. Bennett has attempted to relieve the condition by means of a special method of lengthening the *quadriceps* tendon. Favourable results are said to follow this form of treatment.

A useful point in the technique of the operation of transplanting the patella in recurring dislocation of this bone has been elaborated by W. R. MacAusland and A. F. Sargent. They have split the patella tendon and transplanted its mesial half together with its bony attachment to a more mesial position on the tibia.

The question of the fate of severed peripheral nerves after suture has long engaged the attention of orthopædic surgeons. Quite recently this interesting matter has again been investigated by J. S. B. Stopford. He has had the opportunity of observing fourteen persons in whom peripheral nerves had been re-sutured after division and primary repair. He claims that good results may be expected if the conditions for operation are satisfactory and if the lapse of time since the original injury is not too great.

Ophthalmology.

Renewed attention has been directed during the year to the close association between ocular disease and sinus infection. Sometimes the connexion is obvious. Iritis, cyclitis and optic neuritis may fol-

low collections of pus in the antral, frontal, ethmoidal and sphenoidal regions and subside rapidly after their surgical treatment. The problem is more difficult when partial or complete blindness is found in the total absence both of ophthalmoscopical and rhinoscopical signs. These conditions are discussed by various authors and the propriety of opening up the ethmoidal and sphenoidal sinuses is debated. It has been found that this procedure is often followed by brilliant results.

W. E. Dandy has recorded two very instructive cases of pre-chiasmal intracranial tumours of the optic nerve. Besides the interest attaching to certain fine points in diagnosis, his account of the exposure by frontal craniotomy opens up important questions in the surgical treatment of optic nerve tumours. Many orbital tumours extend into the cranial cavity and for them orbital operations are necessarily inapplicable. When such an extension exists, only an intracranial operation can save life or vision. By the cranial route the roof of the orbit is exposed and it and the orbital tumour can be removed.

During the year various methods of cataract extraction have been exploited. Barraquer's operation is still commanding much attention, though few reports have been published of its results at the hands of other surgeons. Arnold Knapp continues to extract in the capsule with Kalt's forceps whenever he can and Kalt himself is still the apostle of corneal suturing. MacGillivray has adapted subconjunctival extraction and claims many advantages for it.

As a contribution to the surgical treatment of glaucoma, H. Gifford has revived Curran's operation of peripheral iridotomy. A Knapp's knife needle is passed through the limbus, picks up the iris, counterpunctures it and by cutting upwards against the cornea, cuts through a little bridge. This small aperture more effectively than an iridectomy restores the free flow of aqueous fluid from the posterior to the anterior chamber, thus pushing back the iris-lens system into its proper position and freeing the iridic angle. Gifford acclaims it as the most important discovery since the introduction of iridectomy.

The slit lamp of Gullstrand used with the binocular Czapski microscope forms a valuable addition to the methods of examining the living eye. New vessels in the cornea may be seen weeks before there is naked-eye evidence of interstitial keratitis and iritis may be diagnosed twenty-four hours before it can be recognized clinically.

In the surgery of convergent strabismus a new suggestion comes from P. C. Jameson in the form of a tenotomy with fixation of the tendon by sutures to the sclera behind its original insertion. The operation is called muscle recession and is worthy of consideration.

On the pathological side A. C. Woods has examined the sera of patients with perforating injuries of the eye for the complement fixation reaction against an antigen of uveal pigment. There is a prospect that a guide may be obtained as to the probability or otherwise of the onset of sympathetic ophthalmitis in the fellow eye. Other workers are endeavouring to evolve a technique to create immunity to lens protein in those susceptible to it and thus to prevent the severe reaction usually attributed to retained cortical matter after cataract extraction.

Radiology.

The question of high voltage X-rays has occupied the attention of radiologists during 1922. The closed core transformer is gradually replacing the induction coil type, as its output is constant and there is no troublesome interrupter requiring attention. The mammoth Coolidge tube is also being more widely adopted, as it is found to be easily controlled and has a very long life under strenuous usage.

It has been determined by experiment that water and human tissues absorb X-rays and γ rays almost equally within the limits of their employment in radiology. Dessauer has made use of this fact in calculating the depth dose of these rays at any given point in the body. His charts are accurate and enable the radiologist to ascertain the percentage of the skin dose received at any distance from the surface. Several important publications on this subject have appeared both in Europe and in America. Enthusiastic discussions, tempered by good-natured criticism, have taken place at meetings of the Branches of the British Medical Association in Australia. L. J. Clendinnen, H. Carew Nott, E. H. Molesworth and B. J. Harrison have dealt with the whole subject of modern deep X-ray therapy. From elsewhere reports are both numerous

and encouraging. It would seem that the relief secured in patients whose malignant growths have advanced beyond the stage when surgery has anything to offer, has already justified the trouble and pecuniary outlay in installing and working these large apparatus. It is hoped that by combining irradiation with surgery recurrence of malignant growths of the breast may be prevented. Recognition should be given to the contributions to this advance in physical therapy by Coolidge and other experts working in the laboratories of the General Electric Company in New York.

An important report by Lazarus Barlow and Sidney Russ on the medical uses of radium has been published by the Medical Research Council. Reference to this work has already been made.

The most important achievement in the field of radiography is the invention of a stabilizer by Victor and Kearsley. This instrument yields constant accuracy in the milliampère readings, formerly a most difficult matter. The stabilizer may be set at twenty milliampères and by regulating the autotransformer button it is possible to increase the voltage over a wide range, from twenty to eighty kilo-volts, without any variations in milliampèrage. An assistant can be taught in a few hours to take the most beautiful skiagrams by means of this apparatus. If the milliampèrage, time and distance are kept constant, by altering the penetration a chart for all parts of the body can quickly be compiled for any given machine.

During the past twelve months the employment of corona-less aerial systems has become more general. By the use of heavy, smooth rods for aerials and by abolishing angles and corners, corona discharge is abolished, ozone production is reduced to a minimum and in this way the safety of the patient and of the operator is enhanced.

The Potter-Bucky diaphragm has become firmly established in every X-ray laboratory. It enables the operator to produce a satisfactory skiagram of even the stoutest patients. The adaptation of the grid to fluoroscopy has been attempted, but up to the present, the results have not been good.

Progress has been made in the examination of the appendix. J. G. Edwards has contributed an instructive article to this journal in the course of which he has demonstrated with clarity the value of radiography in the recognition of the several types of appendices and the differentiation between the healthy organ and the diseased. He states that with few exceptions the appendix can be seen during a screen examination and its characters studied. Charles Eastwood has also dealt with this subject and draws attention to the additional information gained during the fluoroscopic examination when palpation is practised simultaneously.

Late in 1921 some interesting studies of the changes encountered in bone in certain diseases were published. D. B. Phemister recognizes a reduction of bone density in diseases with retarded deposit of bone and in conditions associated with the absorption of bone. Specific osteoclasts do not exist. There are many cells endowed with the power of absorbing bone. The process of absorption occurs both of living and of dead bone. N. Allison and B. Brooks have paid especial attention to the reduction of density of bone in the atrophy of disuse. They have induced the changes deliberately in the course of their experiments and have noted the skiagraphic characters as the trabeculæ disappear, the medullary canal becomes wider and the compact bone is gradually absorbed.

Radiology has also been employed in the study of the heart and some interesting observations have been recorded. It will be remembered that as long ago as 1913 Küpferle attempted to adapt cinematography to radiography for the purpose of recording the appearances of the four chambers of the beating heart. The results were crude and even with the aid of artificial devices it was difficult to discern every phase in the cardiac cycle. Charles Martin has attacked the problem in another way. He employed tele-skiagraphy and produced a picture of the heart at various intervals from a distance of two metres. He has found after having examined a very large number of hearts that a pathological enlargement exists when the transverse diameter of the organ is more than half the transverse diameter of the thorax. While it may be difficult to recognize pericarditis from the skiagraphic appearances, there are certain characters of the shadow which enable the observer to distinguish pericardial effusion from dilatation of the heart.

Abstracts from Current Medical Literature.

MEDICINE.

The Mechanism of Hay Fever.

FRANCIS M. RACKEMANN (*Archives of Internal Medicine*, August 15, 1922) states that the mechanism of hay fever is worthy of study for the reason that hay fever is typical of the great group of clinical conditions presumably due to a natural sensitiveness to some foreign protein. There exist two types of seasonal hay fever in America: (*i.*) early hay fever, occurring in June and July and due to a sensitiveness to the pollen of the common grasses; and (*ii.*) late hay fever, which occurs from the middle of August until the first frost and is due to a sensitiveness to the pollen of rag weed or rarely to the pollen of golden rod. The author's studies were concerned with the late hay fever of patients sensitive to ragweed. His observation and experiments have led him to the belief that the mechanism of hay fever depends on the fact that the tissue cells contain specific antibodies which are absent from the cells of persons unaffected with the disease. Evidence of this addition of cellular antibodies is furnished by the fact that when an antigen is applied repeatedly to the same spot on the skin of a hypersensitive patient, the local reactions following each application become progressively less, due apparently to a local exhaustion of the antibodies. Another suggestion made is that the cells of patients afflicted with hay fever lack something present in normal cells, so that in the cells of such patients there is a failure to neutralize some reaction-producing element in the antigen. But the absence of any antitoxin in the blood, such as occurs in connexion with a response to the Schick test in diphtheria, shows that the symptoms are not due to a lack of function which is normally present. That the symptoms are not due to antibodies circulating in the blood which have a constant action either on the antigen or on the cells is shown both by an inability to demonstrate such antibodies in the blood and by the analogy in serum disease in which the establishment of fixed cellular antibodies, as demonstrated by the skin test, is later uninfluenced by the disappearance of circulating antibodies. The variations in the results of specific treatment are explained by the variations in the degree of sensitiveness, although the skin test is only a crude measure of the number of cellular antibodies. All attempts to demonstrate antibodies fixed to the red blood corpuscles of the patient have failed. There is a close relationship between the mechanism of allergy and that of immunity. In both conditions specific antibodies are present. In allergy these antibodies are fixed especially in the cells; in immunity they are fixed predominantly in the circulating blood. But in neither state are the antibodies exclusively located. In allergy the symptoms probably depend on reactions occurring in the cells. Manwaring and Kusama showed in 1917 that no such symptoms occur in immunity. Reactions following perfusion with serum mixtures were obtained with the lungs of immune guinea-pigs and these reactions were analogous to those obtained with the lungs of anaphylactic guinea-pigs. In life immune guinea-pigs show no reaction to injections of the specific antigen, although it is clear that their cells contained fixed antibodies. This phenomenon is explicable by the protection afforded by the excess of circulating antibodies. The difference between allergy and immunity, therefore, depends on the predominance of antibodies in the cells or in the blood.

Points in Physical Diagnosis.

DAVID RIESMAN (*The Journal of the American Medical Association*, June 24, 1922) describes certain clinical aids to physical diagnosis. In a number of obscure cases of suspected gall bladder disease, the ordinary method of eliciting tenderness is fruitless. For such cases ulnar percussion, similar to the first percussion suggested by the late J. B. Murphy, may be employed. The patient is asked to take a deep breath and hold it. The physician then strikes a brisk, but not a hard, blow over the upper part of the right rectus muscle with the ulnar side of his hand. If any disease of the gall bladder exists, the blow will cause a sharp pain. The same method is applicable to the determination of sensitiveness over the kidneys. A second aid is the method of clavicular auscultation. It is often helpful to determine whether or not an aortic murmur is transmitted into the neck. By the usual method of placing the stethoscope over the cervical vessels a murmur is at times created by pressure. To avoid this source of error a diaphragm stethoscope should be placed over the clavicle. If the murmur is a transmissible one it will be heard along the course of the bone, where no artery can possibly be pressed upon. In arterial hypertension accentuation of the aortic second sound may often be detected by clavicular auscultation when no accentuation is audible over the aortic area. The third point in diagnosis concerns the method of transdigital auscultation. It is frequently difficult to time heart murmurs, especially mitral murmurs. The clinician is often perplexed as to whether he is dealing with stenosis or regurgitation at the valve orifice. In these cases transdigital auscultation is helpful. A diaphragm stethoscope is necessary, a bell stethoscope being useless. The index or middle finger is flexed at a right angle and its tip is placed directly over the apex beat. The stethoscope is then laid on the horizontal phalanx of the flexed finger at the flexed knuckle. Auscultation and palpation are thus performed simultaneously and the physician can determine readily whether a murmur occurs before the finger is lifted, synchronously with the lifting or afterward. Lastly, the author discusses the significance of movable dulness in the chest. It is a current belief that movable dulness is a sign pathognomonic of fluid. But in certain instances the movable dulness is caused by the change in position of the liver. When the patient sits up or stands, the liver is found to be one or two interspaces higher than it is when he lies down, a striking change in resonance being produced in consequence. Flabbiness of the liver and lack of diaphragmatic tone may be the factors in the production of this phenomenon. To prevent mistakes in diagnosis the clinician should locate carefully the apex beat, examine for movable dulness in the axilla, as well as in the front of the chest, and in obscure instances have recourse to the Röntgen rays before tapping.

The Ætiology of Scurvy.

EDWARD B. VEDDER (*The Military Surgeon*, May, 1922) has performed a series of experiments on guinea-pigs to determine the ætiology of scurvy. From a consideration of his results he concludes that scurvy is not caused by deficiency of the internal secretions of the thyreoid, adrenal or pituitary glands and that there is no evidence that it is due to a deficiency of any internal secretion. The anti-scorbutic "vitaliment" is not present in the circulating blood and its presence cannot be demonstrated in the urine or fæces of normal animals. The administration of considerable quantities of erythrocytes, voluntary muscle, heart muscle and bone all failed to prevent the development of scurvy or even to prolong the depletion period. The anti-scorbutic element is not present in these tissues in any appreciable quantity. The daily administration of five grammes of either fresh liver, kidney, lung, spleen, pancreas, thymus or brain protected guinea-pigs completely from scurvy for one hundred days. All of these organs, with the possible exception of thymus and brain, also promoted normal growth. The daily feeding of guinea-pigs with two grammes of liver, lung or spleen or with one gramme of liver protected them from the disease for one hundred days. Two guinea-pigs receiving two grammes of kidney both developed scurvy after a depletion period of fifty days. There is no evidence that the anti-scorbutic "vitaliment" is stored in the body as such. All the evidence indicates that it is not so stored. Hence, if the anti-scorbutic "vitaliment" is present in these tissues (liver, lung, spleen, kidney, pancreas, thymus and brain) and is not stored as such, it must form a component part of these tissues. The results have a practical application. It has been known for some time that meat, at least in the amounts that can be fed to guinea-pigs, will not prevent scurvy, but it is possible that the relatively large amount of meat that can be consumed by a man may have some anti-scorbutic power. Nevertheless, the anti-scorbutic power of such organs as liver, spleen, lungs and kidney is infinitely greater than that of meat and, in fact, is greater than that of fruit juices and most green vege-

tables. This information may be of value in the prevention of scurvy among Arctic explorers and in armies. As the anti-scorbutic element cannot be demonstrated in the circulating blood, it would seem that, although it must enter the blood in order to be carried to the various organs in which it is shown to be present, it is appropriated by these tissues as rapidly as it appears in the blood, so that at no time is there any reserve in the blood. A constant supply of the "vitaliment" is a necessity of cellular metabolism. It takes only fifteen days for a young guinea-pig to manifest signs of scurvy and when the disease is demonstrable clinically, it is already far advanced.

Intestinal Flora.

C. C. BOAS (*Annals of Clinical Medicines*, July, 1922) gives a *résumé* of the normal intestinal flora in man and discusses the possibility of altering the flora by administration of certain foods or certain bacterial cultures by the mouth. At birth the meconium is sterile. In breast-fed infants there is for a few days a mixture of organisms and then *Bacillus bifidus* predominates. Artificial feeding is followed by a transient decrease of *Bacillus bifidus* and increase of *Bacillus acidophilus*. Subsequently the mixed flora of the adult is noted, mainly *Bacillus coli*. The author fed patients with one litre daily of a culture of *Bacillus acidophilus* in milk. Rapid transformation of the intestinal flora resulted and in one instance after five months *Bacillus acidophilus* alone was found in the fæces. After examining commercial preparations of *Bacillus acidophilus* the author concluded that it would require one thousand kilograms of *Bacillus acidophilus* tablets to contain as many bacilli as are contained in one litre of *Bacillus acidophilus* milk culture and that a patient would require to take daily thirty-one to thirty-six litres of commercial liquid cultures to get as many bacilli as he would in one litre of *Bacillus acidophilus* milk culture.

Air Embolism.

K. SCHLAEPFER (*Bulletin of the Johns Hopkins Hospital*, September, 1922) publishes a paper on air embolism following various diagnostic or therapeutic procedures in diseases of the pleura or the lung. He gives a great number of references in support of air embolism as the cause of convulsions, collapse, fainting and other symptoms in exploration of the pleural cavity. For some time continental observers have maintained that this condition is due to so-called pleural reflex, the mechanism being nervous. The reason for this theory was that no lesion was found at autopsy. A number of instances has now been reported, however, in which emboli were found in the cerebral and other vessels following death from this cause. Puncture of the chest wall, irrigation of the pleural cavity, changing tubes, introducing a probe or rubber catheter, bismuth paste filling, decortication, thoracoscopy, fat or paraffin plumbage, pneumotomy and pneumectomy have all been followed by serious symptoms. The best treatment is to stop the operation immediately and administer stimulants.

Reticulosis.

E. B. KRUMBAAR (*Journal of Laboratory and Clinical Medicine*, October, 1922) has published some investigations on the reticulated red cells in the blood and summarized the information gained in regard to these cells since first observed by Ehrlich in 1881. With vital staining it has been found that there are about 1% of reticulated erythrocytes in adult blood. These cells are more numerous in infants up to the seventh day and occur more readily and to a greater degree in infants than in adults. In pernicious anæmia there are 2% to 15% of reticulated red cells in the blood, in hæmolytic jaundice 10% to 20% and in secondary anæmias they are proportionate to the severity of the anæmia. In aplastic anæmia and other forms of anæmia associated with decreased blood formation they are diminished or absent. Staining of the reticulum with the Romanowsky method in many cases but not invariably produces a picture similar to that observed in polychromatophilia. Basophilic degeneration of red cells in lead poisoning is considered to be of a different nature, being degenerative, whereas reticulosis occurs in blood that is regenerating.

Œdema of the Lungs.

G. LEMOINE (*Gazette des Praticiens*, October 15, 1921) considers the explanation and the treatment of acute pulmonary œdema. Hypertension is frequently associated with this condition, but the tension is not always raised. Gallavardin suggested failure of the left ventricle as the cause in patients with valvular disease, but the condition occurs in so many different affections that this explanation is not sufficient. Lemoine thinks that errors in diet have an effect in precipitating an attack in subjects predisposed to pulmonary œdema, as in nephritis and aortic disease. All authors agree that bleeding (200 to 400 cubic centimetres) is advisable. Huchard recommends injections of caffeine, repeated at intervals of several hours. Lemoine favours this procedure, but considers the injection of morphine, as advocated by Fiessinger, is strongly contra-indicated. He favours strophanthine rather than digitaline and injections or camphorated oil or adrenalin, repeated at intervals, if necessary.

Endocarditis.

W. THALHIMER (*The Archives of Internal Medicine*, September 15, 1922), in an article on chronic non-bacterial cardio-valvular disease, pleads for the more careful *post mortem* study of non-bacterial verrucous endocarditis. He describes the vegetations in bacterial endocarditis as rough and irregular and always containing bacteria. In the simple or verrucous endocarditis of rheumatic fever small, beaded vegetations are found along the line of closure of the valves and Aschoff bodies are always present in the myocardium. In terminal verrucous endocarditis minute, scattered, colourless verrucæ are found on the valves of patients dying after a slowly progressive illness. In non-bacterial, non-rheumatic verrucous endocarditis minute verrucæ are present on nearly all thickened, fibrosed valves. In non-bacterial endocardial vegetations in congenitally abnormal hearts endocardial thickenings of fibrous tissue occur. In bacterial endocarditis and rheumatic endocarditis the cause of the lesions is known, but in the other forms of so-called endocarditis the cause has not been ascertained, though the verrucæ are often similar to those of simple rheumatic lesions. The author considers that bacteria are not the direct cause of the lesions in the non-rheumatic, non-bacterial forms of endocarditis.

Toxin Antitoxin (Diphtheria).

W. H. PARK (*The Journal of the American Medical Association*, November 4, 1922) has given his experiences of the use of toxin-antitoxin for producing immunity against diphtheria in children. Since 1913 he has been able to treat and observe about ten thousand children. He has found that three injections of one cubic centimetre of a suitable toxin-antioxin mixture at intervals of one or two weeks will lead in about 85% of children to produce sufficient antitoxin to inhibit a reaction to the Schick test and to give definite protection against diphtheria. The development of this amount of immunity takes from one to six months. The duration of the immunity is for more than six years in 90% of children. The toxin-antitoxin injections should not be given to children below the age of six months. Toxin-antitoxin is not useful in the production of immediate immunity in diphtheria; antitoxin must be used for this purpose as heretofore.

Filaria.

B. BLACKLOCK (*Annals of Tropical Medicine and Parasitology*, July 20, 1922) has published the results of an investigation made to determine the frequency with which *Microfilaria bancrofti* occurs in the blood of patients with signs of filarial disease. Two hundred and forty natives were examined at Mabang, in Sierra Leone, and notes made of enlarged or palpable glands, elephantiasis, ulcers, hydrocele, enlarged testis and abscess; a blood film was taken between 6 a.m. and 6 p.m. and examined later. Among one hundred and thirty-eight persons with signs of filarial disease, twenty-nine were shown to be infected with microfilaria and among one hundred and two without signs of filarial disease eighteen were infected with microfilaria. In this series, therefore, in a large proportion of natives the signs of filarial disease could not be correlated with the presence of filaria in the blood. The author considers that, in view of this fact, the term signs of filarial disease requires further and critical examination.

Special Abstract.

PITUITARY EXTRACTS.

DR. H. H. DALE, C.B.E., F.R.S., AND DR. J. H. BURN have published from the National Institute for Medical Research at Hampstead a report on the physiological standardization of extracts of the posterior lobe of the pituitary body.[1] This report is of great importance to the medical profession, not only because of the scientific value of the work conducted by the authors, but also because it contains an urgent warning to practitioners against accepting the statements of the manufacturers of commercial preparations of pituitary extract concerning the physiological activity of their several preparations. The announcement is made that a committee appointed jointly by the Obstetrical Section of the Royal Society of Medicine and the Medical Research Council is investigating the question of dosage of these extracts for medical and surgical purposes. The report of this committee will supplement the present report and offer guidance to practitioners employing these preparations in obstetrics and in medical or surgical practice.

The Basis of Standardization.

Drs. Dale and Burn point out that, as the active principles of the posterior lobe of the pituitary body are unknown and as these substances are very unstable, it is impossible at present to estimate their presence qualitatively by chemical methods. The extracts are usually employed in emergency and it is therefore essential that the practitioner should be able to rely on some form of standardization, so that he may be able to anticipate the action that will follow the injection of a given dose. Manufacturers of the much used preparations usually indicate the strength of the extract in terms of weight of fresh gland substance per unit of vehicle. In the course of the report they point out that this statement of "strength" is very misleading and that extracts that are equivalent to one another, may vary in their physiological action within very wide limits.

In order that uniformity of action may be attained, it is necessary to have recourse to physiological methods of standardization. The action of the extract on the melanophores of fish scales has been suggested by R. A. Spaeth as a delicate indicator. The authors have found, however, that this action is quite distinct from that involved in the therapeutic use. It has been determined that posterior lobe extracts exercise a distinct action on the uterine muscle and another on the plain muscle of arteries. They have demonstrated that, while the pressor action usually corresponds to the stimulant action on the uterus, this is not always true. They therefore conclude that the two are distinct.

The effect of the injection of the extract on blood pressure was first studied by W. H. Howell. Several investigators claim that this represents a test of great sensitiveness. The authors point out that there are reasons for believing that the pressor effect is produced by more than one principle. In these circumstances the blood pressure method would give an estimate of but part of this pressor action due to a subsidiary active principle. Moreover, the action becomes greatly reduced on repetition. After small doses are administered, the response lessens until at length small, equal doses give rise to equal results. It is these diminished effects that are used for comparison.

The uterus test is simpler to carry out. It has the advantage that no tolerance is produced, but, on the contrary, the tissue becomes more sensitive to repeated applications. The authors regard the carrying out of the tests as tedious, because the manipulations are so easily achieved. After prolonged study and full consideration of all the attendant circumstances, they have come to the conclusion that the test on the guinea-pig's uterus is by far the most suitable for quantitative comparisons with a standard. The blood pressure test is less accurately quantitative, but should be employed merely as an occasional supplementary test.

The Uterus Test.

The apparatus is described in detail and illustrated. For the purposes of this abstract it may suffice to record that it consists of a cylindrical graduated glass testing vessel, capable of being emptied and refilled expeditiously. This vessel is immersed in a large thermostat of stout copper which can be kept at a constant temperature with little control. The strip of uterus is attached to the bottom of the cylindrical vessel and the upper end is suspended by a thread to one limb of the special writing lever. The testing vessel is connected with a flask containing the immersion fluid kept at the desired temperature.

Great importance is attached to the immersion fluid. Formerly Locke's solution was used, but the authors have found that the quantity of bicarbonate of soda should be increased to 0.05%, that a very small quantity of magnesium chloride should be added and that in other respects the solution should correspond to the Locke-Ringer solution in common use. They are insistent on the necessity of employing solutions of definite composition; unless a fluid of uniform quality is used, comparisons cannot be made.

In the next place they find no justification in limiting the source of the test uterus within very narrow limits. They use the virgin uteri of young guinea-pigs weighing not more than three hundred and fifty grammes. Animals should not be used when on "heat" and they prefer to keep the animals destined for this test in a pen apart from male guinea-pigs. The whole horn of the uterus is used, suspended between a cervical tag and the ovary. While they admit a theoretical disadvantage of retaining the ovary, they have found in practice that it can be ignored. The test is carried out by introducing into the immersion fluid a sufficient quantity of the extract to be tested to induce a sub-maximal contraction of the uterine preparation after complete relaxation has been attained.

Artificial Standards.

In order to standardize a given preparation, it is necessary to have a fixed standard for comparison. To endeavour to ascertain the weakest dilution of the extract that would suffice to cause a maximal contraction, would involve a serious difficulty, namely, the variability of the sensitiveness of the particular uterine horn used. Three standards have been suggested. They are histamine, potassium chloride and a freshly prepared extract of posterior lobe prepared in a prescribed manner.

Histamine.

Fresh solutions of histamine diphosphate were prepared each day for the purpose of testing their suitability. The dilution employed after the addition of the solution to one hundred and twenty-five cubic centimetres of the immersion fluid was one part in twenty-five million parts. A special extract of pituitary body was made and the effects of varying quantities of this extract and of the histamine solution were recorded. In one set of experiments it was found that the effect of 0.5 cubic centimetre of histamine solution was equal to that of 0.3 cubic centimetre of the extract, while on repetition the same quantity gave rise to a weaker response. Later it was found that 0.2 cubic centimetre of extract had a greater effect than 0.8 cubic centimetre of histamine solution. In other tests very irregular results were obtained. The authors, therefore, were forced to the conclusion that histamine did not fulfil the conditions required for a suitable standard. It should be pointed out that the United States of America Pharmacopœia contains a prescribed standard based on the use of histamine. The standard extract demanded in a dilution of extract of fresh gland substance of one part in ten thousand. Reviewing their results in the light of this standard, the authors find that one of the test samples would have been passed as standard. The same extract, however, tested against another sample of histamine solution of the same strength was found to be more active in the ratio of two to three. The discrepancies have led them to conclude that uteri from different guinea-pigs, even under the best conditions, vary in their sensitiveness to histamine and to pituitary extract in an independent man-

[1] "Reports on Biological Standards: I., On the Physiological Standardization of Extracts of the Posterior Lobe of the Pituitary Body," by J. H. Burn, M.A., M.B., and H. H. Dale, C.B.E., M.D., F.R.S.; Medical Research Council (Privy Council), Special Report Series, No. 69; London, 1922. Price: 1s. 6d. net.

ner and that for this reason alone histamine is unsuited to serve as a standard.

Potassium Chloride.

Similar tests were carried out with potassium chloride. A solution containing 19.68 grammes per hundred cubic centimetres was used. In each of four tests the extract was at times stronger and at times weaker than the chloride solution. No uniformity was obtained.

Standard Extract.

The employment of a laboratory extract of fundibular substance prepared in accordance with standard conditions must remain a compromise. The authors admit that if a dry, stable sample of fundibular substance could be obtained and if extracts from this dry substance could be made which would yield the same action indefinitely, the extract would be an ideal one. It may be possible to devise a method for such an extract. They claim that the extract made according to their directions, however, yields effects which are reliable for practical purposes. They find that the infundibular substance dried in an ordinary commercial sense loses a considerable part of its activity in the space of a year.

Their extract is made from fresh glands obtained from the abattoir. At first the glands were removed to the laboratory without special precaution. Later they have found it advisable to freeze the glands immediately they are removed from the carcase by inclusion in a Dewar flask with freezing mixture. They use six to eight glands for each extract. The glands are dissected as rapidly as possible after their reception at the laboratory. In view of the results of experiments, they refuse the small masses of colloid material in the neighbourhood of the *pars intermedia*, as these masses are inert. The posterior lobes are carefully isolated and are then divided as finely as possible with scissors. The pieces are mixed and weighed on glass slides which have been tared. The slide with the weighed substance is then introduced into a two hundred cubic centimetre flask and distilled water is added in the proportion of forty cubic centimetres to each gramme of substance. The flask is allowed to stand at laboratory temperature for one hour and at the end of this period 0.2 cubic centimetre of a decinormal solution of acetic acid is added for each gramme of gland substance. The flask is then transferred to a large bath of briskly boiling water. The object of this is to heat the extract rapidly. Temperatures between 30° C. and 50° C. favour the action of enzymes. It is suggested that the fall of activity which occurs at room temperature, is caused by an autolytic enzyme. Rapid raising of the temperature to 100° C. destroys enzyme. By this method there is no loss of activity. After ten minutes the flask is removed from the hot water bath and cooled under a running tap. The cooled extract is then filtered through paper, but the residue is not washed. The filtrate represents a 2.5% extract of fresh gland substance.

It was determined that each hundred parts of fresh gland substance is equivalent to approximately twenty parts of dried substance. They therefore describe their extract as a 0.5% extract in terms of dry gland substance. It is further pointed out that manufacturers cannot possibly prepare extracts on a large scale in this manner. The time taken to dissect the large quantities of glands must be considerable and during this period there is a steady deterioration. Moreover, it would be impracticable to employ the rapid heating of the extract on a large scale.

The Test.

The horn of the uterus is left alone until complete relaxation has taken place. This usually takes from twenty to thirty minutes. The weight on the recording level is then adjusted and the first dose of the extract is added to the immersion fluid. The authors start with 0.5 cubic centimetre of a dilution of one in fifty of the standard extract. This would yield one part of dry weight in two and a half millions of vehicle. The first contraction may be maximal and may be maintained for a few minutes. In such a case the immersion fluid is removed and fresh solution introduced. After a few trials a dose will be found that causes the muscle to respond regularly with identical contractions, slightly less than the maximum. When the dose has been fixed, it is necessary to ascertain whether or not a decrease follows a decrease of the dose and an increase follows an increase. Tracings are given to illustrate the results obtained. A considerable number of tests were carried out with this standard extract. It was found that six out of seven extracts yielded uniform results when compared with the standard extract. The exception was subjected to further investigation. It was found that this extract had been prepared by slow heating. A comparison between new extracts, one heated rapidly and the other heated slowly, yielded the same divergences as had been noted in the first test.

The Application of the Standard to Commercial Extracts.

The authors avoid the mention of the names of the manufacturers of five well-known extracts purchasable on the English market. In the first place, they recognize that the unsatisfactory results of the tests are not due to lack of care on the part of the manufacturers. In the second place, they desire to prevent the manufacturers from quoting the report for advertisement purposes, as sentences taken out of the test might bear an entirely erroneous meaning.

The use of pituitary extract has assumed very large proportions. The authors are not in a position to judge whether these extracts should be used so freely. Before testing the activity of the commercial preparations, they carried out some experiments to ascertain the effect of drying the fresh gland before extracting. When the substance is dried *in vacuo* over phosphorus at 0° C. or 40° C., there was no obvious loss of activity. When it was dried at room temperature *in vacuo* over sulphuric acid there was a significant loss.

Of the five samples tested, one was said to be a 5.6% extract of dry substance, one a 20% extract of fresh gland, one was a 10% extract of fresh substance and was supposed to have been standardized by the uterus and blood pressure methods, the fourth was a 10% extract of fresh substance, standardized by the uterus method, and the fifth was a 10% extract standardized by the blood pressure method. Attention is called to the fact that, while two of these extracts are of American manufacture, the official histamine test was not adopted.

Several tests were carried out to determine the comparative value of the commercial extracts in terms of the standard extract. The first was found to have an activity which varied from 50% to 61%, when calculated back to dry weight. The second preparation also varied widely. One sample was shown to be 55% of the standard and another to be 62.5% of the standard. The third extract was found to be between 50% and 60% of the standard, while the fourth was only 21% of the standard. The fifth proved to be only 2% of the standard. Drs. Dale and Burn summarize this chapter of their report with the remark that, while the first, second and third extracts form a group in which the amount of original activity preserved varies between about 50% and 60%, there is a more serious loss in the fourth, namely, about 80%, and in the fifth only a trace of the activity remains.

The labels on the commercial extracts bear in some, but not in all, cases the theoretical strength of the preparations. It is suggested, however, that medical practitioners would regard two different preparations of pituitary gland dispensed in sealed ampoules containing one cubic centimetre each as equivalent. In order to make the facts quite clear the authors have drawn up a comparison of the five commercial extracts. The relative activity of the first, second, third and fourth extracts is eighty times, forty-five times, twenty-five times and eleven times that of the fifth.

In the next place they have tested the same commercial extracts for their action on blood pressure. They recognize that this test is not as reliable for quantitative estimations as the uterus test. They employed pithed cats in whom artificial respiration was maintained with pure air. The results are expressed by assuming that the first extract possessed about 80% of the full pressor activity of a standard extract. By comparison, the first strength is fixed at 80, the second was found to be 40, the third between 15 and 30 and the fourth about 23. The fifth extract had no pressor action at all.

Conclusions.

Drs. Dale and Burn deplore that the preparations of pituitary extract, a valuable and dangerous remedy, habitually used by practitioners vary so largely in their activity. The first extract would seem to be the best, but it is pointed out that each unit of extract represents nearly three times as much gland substance as does the third. In any case the practitioner accustomed to use the third, would find the first dangerously strong, while the practitioner usually employing the first, would find the third unduly weak. They maintain that this state of affairs is not only deplorable; they are convinced that it is quite unnecessary. Two factors are involved in the satisfactory manufacture of infundibular extracts. The first is the proportion of gland substance and the second is the yield of activity. To obtain uniformity of theoretical strength it would be necessary to adopt an agreed formula. They have no sympathy with the manufacturer who claims exceptional or unique potency for his preparation. Competition between the several manufacturers serves no useful purpose to the patients or to the practitioners using the preparations. What is wanted is a sterilized, watery decoction of the infundibular substance of a fixed theoretical strength. All extracts sold should conform to this strength. The United States of America Pharmacopœia had officially adopted a theoretical strength of 10% of fresh infundibular substance. The authors urge the general adoption of this strength.

The second point is less simple. The standard of activity of a 10% extract should be that obtainable by a manufacturer who uses sound material and proper skill. The authors recognize that their laboratory standard extract cannot serve as a standard for commercially prepared extracts. It would appear, however, that an extract with activity equivalent to 60% of the standard extract could be produced on a large scale. They therefore suggest that no commercial extract should be offered for sale if it has less than 55% or more than 65% of the activity of their standard extract, as tested on the isolated uterus of the guinea-pig. They would recommend a further test on the blood pressure of the cat or dog, not for the purpose of fixing the equivalent degree of activity, but for the purpose of demonstrating that the pressor principle has not been destroyed in the process of manufacture. The standard test extract should be prepared at relatively short intervals. They do not suggest that a fresh test should be made for each batch of extract destined for sale, but a standardized extract could be used for comparison with the next batch produced, provided that an independent test extract is prepared from time to time, to act as a check.

When uniformity of activity has been obtained for the extracts of posterior lobe of the pituitary body, the medical practitioner will need guidance in regard to the proper dose to be used. The present practice of injecting the contents of one ampoule of an extract that may vary in physiological activity is not only unscientific, but is very dangerous. The authors refrain from discussing the question of dosage, in view of the work of the committee referred to above.

British Medical Association News.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

DAVISON, SAMUEL HOWARD, M.B., Ch.B., 1912; M.D., 1916 (Queen's Univ., Belfast), Scone.

KILGOUR, HEATHER, M.B., Ch.M., 1922 (Univ. Sydney), 38, Alt Street, Ashfield.

MAGUIRE, BERTRAND FRANCIS MARTIN, M.B., Ch.M., 1922 (Univ. Sydney), Carcoar.

NORTH, ALAN LINDSAY, M.B., Mast. Surg., 1920 (Univ. Sydney), 235, Macquarie Street, Sydney.

ZIMMERMAN, CARL JOHN, M.B., Ch.M., 1922 (Univ. Sydney), Birrell Street, Waverley.

Naval and Military.

APPOINTMENTS.

THE following appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, No. 4, of January 18, 1923:

Australian Military Forces.

FIRST MILITARY DISTRICT.

Eleventh Mixed Brigade: Staff.

LIEUTENANT-COLONEL G. W. MACARTNEY, D.S.O., Australian Army Medical Corps, is appointed Assistant Director of Medical Services, Fifth Divisional Head-Quarters, during the absence on leave of COLONEL A. G. BUTLER, D.S.O., 1st November, 1922.

Australian Army Medical Corps.

CAPTAIN (provisionally) A. D. MCKENZIE is appointed to command the First Cavalry Field Ambulance, 1st July, 1922.

HONORARY CAPTAIN H. EVANS is appointed from the Australian Army Medical Corps Reserve and to be Captain (provisionally), 14th November, 1922.

CAPTAIN W. L. MILLETT is transferred to the Reserve of Officers, 13th November, 1922.

SECOND MILITARY DISTRICT.

Australian Army Medical Corps.

MAJOR W. L. KIRKWOOD, O.B.E., is appointed to command the Ninth Field Ambulance, 1st December, 1922.

LIEUTENANT-COLONEL J. C. STOREY, O.B.E., relinquishes the command of the Ninth Field Ambulance, 30th November, 1922, and is transferred to the Unattached List, 1st December, 1922.

Reserve of Officers.

HONORARY CAPTAIN T. E. MARSHALL is transferred from the Australian Army Medical Corps Reserve, Fifth Military District, and to be Captain, 1st October, 1920. (This amends the notification respecting this officer which appeared in Executive Minute No. 118/1921, promulgated in *Commonwealth of Australia Gazette*, No. 27, dated 24th March, 1921.)

THIRD MILITARY DISTRICT.

Australian Army Medical Corps.

LIEUTENANT-COLONEL G. A. W. J. KNIGHT, O.B.E., is transferred to the Unattached List, 3rd November, 1922.

THE resignation of LIEUTENANT C. H. OSBORN of his provisional appointment is accepted, 7th November, 1922.

Reserve of Officers.

THE undermentioned officer is placed on the Retired List, with rank shown, and with permission to wear the prescribed uniform: *Honorary Major*—CAPTAIN F. J. PACEY, 19th December, 1922.

Australian Army Medical Corps Reserve.

LIEUTENANT (provisionally) W. A. COLLOPY is transferred from the Australian Army Medical Corps, Fifth Military District, and to be Honorary Lieutenant, 22nd November, 1922.

FIFTH MILITARY DISTRICT.

Australian Army Medical Corps.

LIEUTENANT-COLONEL R. S. MCGREGOR, D.S.O., to be supernumerary to the establishment of Lieutenant-Colonels, with pay and allowances of Major, 1st July, 1922.

MAJOR J. P. KENNY is transferred to the Reserve of Officers, 15th November, 1922.

LIEUTENANT (provisionally) W. A. COLLOPY is transferred to the Australian Army Medical Corps Reserve, Third Military District, and to be Honorary Lieutenant, 22nd November, 1922.

Reserve of Officers.

MAJORS K. R. DE V. SHAW, W. S. SWEET and J. B. LEWIS and CAPTAINS G. S. LANDON and H. O. CHAPMAN are placed on the Retired List, with permission to retain their ranks and wear the prescribed uniform, 1st December, 1922.

Australian Army Medical Corps Reserve.

HONORARY CAPTAIN T. E. MARSHALL is transferred to the Reserve of Officers, Second Military District, and to be Captain, 1st October, 1920.

HONORARY CAPTAIN A. J. MCSHANE is placed on the Retired List, with the rank of Captain and with permission to wear the prescribed uniform, 1st December, 1922.

THE EDUCATION OF SOLDIERS' CHILDREN.

IN August of last year the Department of Repatriation issued a report on its scheme for the education of the children of men who had died on active service during the war or who had been totally and permanently incapacitated. The provisions of the regulations prior to February, 1921, were admittedly insufficient and as a result the whole matter was reconsidered. The advice of experts in education was sought and a new scheme was adopted on February 5, 1921. Boards were established for the purpose of considering, granting and refusing applications and of arranging for the placing of children in suitable courses of training. Wide publicity was given to the aims of the Department and assistance was invited, both for monetary endowment and for the collaboration of public bodies and private institutions in providing facilities for technical training of the sons and daughters of deceased or incapacitated soldiers. The governing bodies of the non-State primary and secondary schools offered no less than five hundred and eighteen scholarships to the Department in connexion with the scheme. Moreover, promises were received from municipal authorities and private employers that preference for training would be given to the children coming under the scheme.

Under the McCaughey bequest a large sum of money was set apart for the education of the children of soldiers who had been killed or had died of wounds or who had been totally and permanently incapacitated. It has been decided that death resulting from physical injury of any kind or from disease, provided that the injury or disease was the direct or indirect result of war service, is included in the definition. The trustees of the bequest and the Repatriation Commission have agreed to cooperate in such a manner that no overlapping will take place and the cost of administration will be kept as low as circumstances will permit. The trustees of the McCaughey bequest recently issued a pamphlet descriptive of the scheme on which the assistance is being extended. Under the Repatriation scheme children from thirteen years to eighteen are placed in schools or as apprentices or are enabled to attend at courses of technical training for industrial employment or to study for professions. Under the McCaughey scheme assistance is granted for university, college or school training for industrial and commercial employment; the children are helped by grants of text-books, stationery and appliances, fares and maintenance allowances. Rewards are given for perseverance and efficiency varying according to the nature of the training selected for the individual child. Grants are made by the trustees after consultation with the boards appointed by the Repatriation Department under the education scheme. The trustees have adopted a scale of allowances similar to those of the Repatriation Department. They undertake under certain circumstances to supplement the allowance granted by the Repatriation Department, but in no case may the weekly wage composed of the supplemental allowance and the original allowance exceed £2 5s. in the second year, £2 10s. in the third year, £3 in the fourth year and £4 in the fifth year for males and £2 in the second year, £2 5s. in the third year, £2 10s. in the third year and £2 15s. in the fourth year for females. The details of the scheme can be obtained from the trustees, Australian Imperial Force Canteens Funds Trust, Victoria Barracks, Melbourne.

Obituary.

STEWART CLIFTON JOHN McRAE.

THE death of Dr. Stewart McRae, which occurred at the Melbourne Hospital on December 22, 1922, has cut short a career full of promise.

Stewart Clifton John McRae was born at Tallangatta, Victoria, on December 5, 1898. He received his primary education in Tallangatta and in 1911 won a scholarship tenable at Scotch College, Melbourne. His entry at Scotch College marked the beginning of a brilliant scholastic career, in the course of which he displayed considerable intellectual gifts.

A long record of examination successes is associated with the name of Stewart McRae. In 1914 he won a senior scholarship at the public examinations and later he secured a major scholarship at Ormond College, Melbourne University. At school he won the Alexander Morrison Gold Medal for a prize essay and was twice successful in gaining a prize at the annual examination of the Melbourne Shakespeare Society, with the added distinction on the second occasion of heading the list.

His literary gifts enabled him to secure the *Dux* prize of Scotch College for two successive years in English and History and were employed to the great advantage of his school in his editorship of the *Scotch Collegian*.

Stewart McRae commenced his medical course at the Melbourne University in 1917 and throughout his name appeared on the honours lists. At the completion of his course he qualified to become a resident medical officer at the Melbourne Hospital, an appointment which he had held for a few months when his untimely death occurred.

Although devoted to his work, Stewart McRae found time to give to the interests of his fellow students; he was an energetic member of the Committee of the Medical Students' Society and during his last two years at the University represented his year on the Students' Representative Council.

The Melbourne Hospital Students' Clinical Society, now an active body, owes its genesis largely to the enthusiasm of Stewart McRae.

To his widowed mother the sympathy of his colleagues on the resident staff of the Melbourne Hospital and of the medical profession in general will be sincerely extended.

Proceedings of the Australian Medical Boards.

NEW SOUTH WALES.

THE undermentioned have been registered under the provisions of the *Medical Act, 1912 and 1915*, as duly qualified medical practitioners:

EDWARDS, ALFRED THEOPHILUS, M.B., 1922 (Univ. Sydney), 393, Marrickville Road, Marrickville.

ORCHARD, ETHEL ADELAIDE, Lic. R. Coll. Phys. Edin., 1908; Lic. R. Coll. Surg. Edin., 1908; Lic. Fac. Phys. Glasg., 1908; now SANDS, ETHEL ADELAIDE, "Sea Mount Flats," East Esplanade, Manly.

For Additional Registration.

BUCKLEY, EDWARD WILLIAM, Bac. Surg., 1901 (Univ. Melbourne), Tamworth.

HENNESSY, KICKHAM EDWARD, Ch.M., 1922 (Univ. Sydney), care of A.M.P. Society, Young.

FIELDING, UNA LUCY, Ch.M., 1922 (Univ. Sydney), "St. Mathias's Rectory," Paddington.

VICTORIA.

THE undermentioned has been registered under the provisions of the *Medical Act, 1915*, as a legally qualified medical practitioner:

BENNETT, CHARLES WILLIAM, M.R.C.S. (Eng.), L.R.C.P. (Lond.), 1919, 28, Lewisham Road, Windsor.

Additional Diplomas Registered.

BROWN, CHARLES JAMES OFFICER, M.D., 1922 (Univ. Melbourne).
CHAMBERS, JOHN FERGUSON, M.R.C.P. (Lond.), 1922.

Names of Deceased Practitioners Removed from the Register.

BROINOWSKI, GRACIUS HERBERT.
HIGGINS, JOHN.
MCRAE, STEWART CLIFTON JOHN.
VAUGHAN, ALFRED PURDUE.

Medical Societies.

THE MEDICAL DEFENCE SOCIETY OF QUEENSLAND.

OUR attention is directed to an error in the Annual Report of the Council of the Medical Defence Society of Queensland, published in THE MEDICAL JOURNAL OF AUSTRALIA of December 30, 1922, page 770. The name of DR. P. C. HIGGINS is included in the list of "losses by death" in error for the name of DR. JOHN HIGGINS, who died at Clermont on October 25, 1922.

Books Received.

PRACTICAL PHYSIOLOGY, by E. P. Cathcart, M.D., D.Sc., F.R.S., D. Noël Paton, M.D., LL.D., F.R.S., and M. S. Pembrey, M.A., M.D., F.R.S.; 1922. London: Edward Arnold & Company; Demy 8vo., pp. xii. + 344 and index with 206 figures.

THE PHYSIOLOGY OF REPRODUCTION, by Francis H. A. Marshall, Sc.D. (Camb.), D.Sc. (Edin.), F.R.S., with contributions by William Cramer, Ph.D., D.Sc., M.R.C.S., L.R.C.P., James Lochhead, O.B.E., M.A., M.D., F.R.C.S.E., and Cresswell Shearer, M.D., Sc.D., F.R.S.; Second and Revised Edition; 1922. London: Longmans, Green & Company; Royal 8vo., pp. xvi. + 770, with 189 illustrations. Price: 36s. net.

Medical Appointments.

DR. E. A. MASON has been appointed Acting Medical Superintendent at the Dunwich Benevolent Asylum, Brisbane, Queensland, during the absence on leave of DR. J. BOOTH CLARKSON (B.M.A.).

* * * *

DR. J. W. GRIEVE (B.M.A.) and DR. W. J. NEWING (B.M.A.) have been appointed Honorary Physicians to Out-Patients at Saint Vincent's Hospital, Melbourne.

* * * *

DR. W. W. STEVENS (B.M.A.) has been appointed as Acting Government Medical Officer and a Health Officer in Queensland.

* * * *

DR. H. S. NEWLAND, C.B.E., D.S.O. (B.M.A.), and DR. BRONTE SMEATON (B.M.A.) have been appointed to the Dental Board of South Australia.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii..

PERTH HOSPITAL, WESTERN AUSTRALIA: Resident Pathologist.

VICTORIAN EYE AND EAR HOSPITAL: Resident Surgeons.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmain United Friendly Societies' Dispensary Friendly Society Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phœnix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

JAN. 27.—Northern District Medical Association, New South Wales: Glen Innes.
JAN. 31.—Victorian Branch, B.M.A.: Council.
JAN. 31.—Western Medical Association, New South Wales: Orange.
FEB. 2.—Queensland Branch, B.M.A.: Branch.
FEB. 7.—Federal Committee of the British Medical Association in Australia.
FEB. 8.—Federal Committee of the British Medical Association in Australia.
FEB. 8.—Victorian Branch, B.M.A.: Council.
FEB. 9.—Queensland Branch, B.M.A.: Council.
FEB. 9.—South Australian Branch, B.M.A.: Council.
FEB. 13.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 14.—Victorian Branch, B.M.A.: Branch.
FEB. 14.—Western Australian Branch, B.M.A.: Council.
FEB. 20.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
FEB. 22.—South Australian Branch, B.M.A.: Branch.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)

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